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ABSTRACT

This volume evaluates learning gains, learning problems, and pedagogical climate related to the elementary school social studies curriculum, "Man: A Course of Study" (MACOS). MACOS, a behavioral/anthropological curriculum, is intended to help elementary school children understand differences and similarities between man and other animals by investigating questions such as what makes man human? how does a group survive? what does dependency mean? and what makes a good parent? The document is presented in three sections. Section I introduces the report and presents an overview of MACOS' development and objectives. In addition, an outline is presented of data in volumes I and II of the report. Section II presents transcripts and interpretations of interviews with students who have participated in a course based on the MACOS curriculum. The basic objective of the interviews was to encourage students to express in their own words how they used MACOS ideas and materials. Section III offers quantitative analysis of results of tests of students in MACOS and non-MACOS social studies courses. Emphasis is placed on factors delineating the environment in which MACOS was taught, children's interpretations of course emphases, and patterns of student responses. (DB)

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AN EVALUATION OF MAN: A COURSE OF STUDY

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Volume I

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SECTION I

MAN: A COURSE OF STUDY
INTRODUCTION AND OVERVIEW

"Knowing is a process, not a product."[*]

In the small work room of an elementary school two fifth grade boys are holding an animated conversation. A young graduate student occasionally asks them a question, but her intervention into the conversation is rare. They seem to have a great deal to say. At the moment, Paul is speaking about a new way of looking at behavior:

> I never realized.... I always thought it was man's brain which separated him from animals. Now you realize that it can be the environment that makes one man different from another. I never really looked upon it like this. EDC, you know, it brings it out. Like in math, why one and one equals two -- in the new math, that brings it out.

A discussion follows about why the course they are describing leads to new thinking about man and his behavior. Paul again speaks out with his opinion:

> It isn't so rigid. It's like this: you don't have to stick with it. We've gotten into half-hour long discussions on the entire opposite subject, yet just sprouting little by little, and it's really interesting and the teacher gets really wrapped up and she keeps going along and we learn alot more than what we would have started out with and it isn't rigid. It's like something you can lean into and turn any way and not, you know: "You _have_ to concentrate on it."

His friend David has an explanation ready:

> I think it's partly because there's all the materials like the films, the booklets and, you know, I could keep on going. It makes it more interesting and easier to do instead of: "Here is the book. Read." And you have to give credit to Miss H. She's a great teacher. She made it so that in EDC studies, you look forward, it isn't one big black thing which you don't understand.

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[*] Jerome Bruner, _Toward a Theory of Instruction_, p. 72.

These comments do not sound like typical school-boy reactions to studies. What kind of school work has elicited such response? These are youngsters in the process of making their own assessments of MAN: A COURSE OF STUDY. They are participants in the interview phase of an evaluation designed to assess this new course in the social sciences. They and their schoolmates in many parts of the country provide evidence for judging the power and limitations of this curriculum innovation.

To provide a basis for comparing achievements of the course against its goals, a brief review of the MACOS gestalt follows. What are the assumptions underlying the course, its view of man and learning, and its structural and conceptual components? Any such review must begin with the thinking of Jerome Bruner. The force of Bruner's ideas has been paramount throughout the development of MAN: A COURSE OF STUDY. In Toward a Theory of Instruction[1] he expresses the theoretical stance and curriculum guidelines evolving from this stance that form the "working paper" for this course. Most fundamentally, Bruner believes that the distinguishing characteristic of human beings is that they learn. With this as the basic assumption, he has defined the important components of what he calls the will to learn, and has delineated the factors that lead to satisfaction in educated learning.

Curiosity is the first major instigator of the will to learn. (Watch children work with building blocks: their desire to see how high a pile they can build before it will come tumbling down illustrates the intrinsic motivation of curiosity about objects and ideas.)

Competence in learning is the second attribute. (We get interested in what we are good at is the way Bruner puts it.)

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[1] Harvard University Press, Cambridge, 1966.

Identification is the third component. Specifically this takes the form of competence models. For the child such people control a rare resource of some desired competence; but "what is important is that the resource is attainable by interaction.... In the process of teaching a skill, the parent or teacher passes on much more. The teacher imparts attitudes toward a subject and indeed attitudes toward learning itself."[1]

The need to respond to others, or reciprocity is the fourth contributor of the will to learn. (Bruner considers this need to be one of the most fundamental motivating aspects of human behavior as we know it.)

Where the will to learn becomes a problem, it is not so much in learning itself but "in the fact that what the school imposes often fails to enlist the natural energies that sustain spontaneous learning -- curiosity, a desire for competence, aspiration to emulate a model, and a deep-sensed commitment to the web of social reciprocity."[2]

Given the attributes of the will to learn, Bruner defines the critical question thus: How do we stimulate thought in the setting of the school where curriculum is set, students confined, and a path fixed? He replies most importantly that children, like adults, need reassurance that it is all right to entertain and express highly subjective ideas and to treat a task as a problem where you invent an answer rather than find one out there in the book or on the blackboard. He is concerned with reestablishing in the child's mind his right not only to have his own private ideas but to express them in the public setting of the classroom. It is implicit in Bruner's answer that instruction is a viable means of promoting learning; that one need not destroy the system to achieve change; that it is possible to recast, reform the institution of the school and that the people who comprise this institution are themselves capable of growth and change.

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[1] Ibid., p. 123.

[2] Ibid., p. 127.

MACOS exemplifies in curriculum a view of man and education that is Brunerian in scope and attitude and is intended to actuate the motivators of learning just described. This commitment is reflected in the assumptions about learning that are apparent in the materials and exercises of the course and in students' and teachers' reactions to it reported in this evaluation. These assumptions can be summarized thus:

1. That it is in good measure a social process by which children and teachers can articulate and share ideas with one another.

2. That competence over a body of knowledge will lead to increased self-confidence and comprehension of one's operating assumptions about life.

3. That the world can be observed, conjectured about, and to some degree ordered and understood using the tools of the behavioral sciences, and that an individual life can be viewed as part of the larger flow of human existence.

In its formulation, the course is intended to draw consistently upon rewarding, not punitive, behaviors in the classroom. It aims at enlarging human capacities rather than refining narrow skills. And it is structured around the community of learning rather than around hierarchical or status-defined roles such as student, teacher, authority.

The organizing conceptual question of the course, "What makes man human?" is posed out of Bruner's abiding concern with "man: his nature as a species, the forces that shaped and continue to shape his humanity."[1] He has classified the five "massive contributors to man's humanization" as: 1) tool making, 2) language, 3) social organization, 4) the management of man's prolonged childhood, and 5) man's urge to explain his world. "We seek exercises and materials," he wrote, "through which our pupils can learn wherein man is distinctive in his adaptation to the world, and wherein there is a discernible continuity between him and his animal forbears."

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[1] Talks to Teachers, Social Studies Curriculum Program, E.D.C., 1968-69, p. 4.

In Talks to Teachers the Social Studies Program Director, Peter B. Dow, relates these conceptual issues to specific learning goals for children using the course:

1. ....to stimulate children to think about the nature of man by providing them with interesting studies of animal behavior and human groups taken from recent work in the behavioral sciences and anthropology. We hope that these studies will provoke students to reexamine what they think they know about themselves and about human beings generally.

2. ....(to) awaken in children an awareness of the fact that what we regard as acceptable behavior is a product of our culture.

The instrumental or pedagogical aims of the course that are intended to develop children's conceptual understanding and personal self-confidence have been specified by MACOS staff as follows:

1. To initiate and develop in youngsters a process of question-posing (the inquiry method);
2. To teach a research methodology where children can:
   a. Look for information to answer questions they have raised
   b. Use the framework developed in the course (e.g. the concept of the life cycle) and apply it to new areas;
3. To help youngsters to develop the ability to use a variety of first-hand sources as evidence from which to develop hypotheses and draw conclusions;
4. To conduct classroom discussions in which youngsters learn to listen to others as well as to express their own views;
5. To legitimize the search; that is, to give sanction and support to open-ended discussions where definitive answers to many questions are not found;

6. To encourage children to reflect on their own experiences;
7. To create a new role for the teacher, in which the teacher becomes a resource to children, rather than only an authority.

It is clear that these goals center around the process of learning, rather than around the product. Just as Bruner suggests, these goals put highest importance on the community of education, on exploration, and on question-posing, rather than on factual specifics or information per se. The course is replete in concepts and information; but the content, the materials are not superordinate to the critical process goals. Rather, a continual interaction of method and material has been devised.[1] Conceptual grasp and mastery of a body of information are never considered separately from the method of working through problems. Learning methods, data sources, and classroom techniques have been developed to implement the major conceptual themes.[1] Bruner has stated that humans translate their experience into a model of the world in three ways: through action, image and symbol (the enactive, iconic and symbolic modes); and that materials for learning must be conveyed in all of these ways. MAN: A COURSE OF STUDY attempts to integrate all three modes of learning, although we find that the iconic and symbolic modes are most heavily emphasized.[2]

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[1] In Bruner's word, "A curriculum... is the enterprise par excellence where the line between subject matter and method grows necessarily indistinct." (p. 72 - Toward a Theory of Instruction.)

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[1] MAN: A COURSE OF STUDY has two major units: "Man and Other Animals," the section including the animal studies of salmon, herring gull, baboon, chimpanzee and others; and the section studying the lives of the Netsilik Eskimos in the Pelly Bay region of Canada. The brochure describing the course summarizes as follows:

The materials fall into three categories: film and other visuals, written materials, and enactive devices such as games. Film is the primary source of data in the course. In color, with natural sound and a minimum of commentary, it is used to simulate field observations. Children gather information and form questions on the basis of repeated viewings in small or large groups.

"Twenty-three booklets of differing style and purpose replace the usual textbook. Some booklets supply data for various units. Others stress concepts such as adaptation, and their use spans several units. In addition, there are field notes, journals, poems, songs and stories.

Games, construction exercises, and observation projects are other learning activities that permit children to work with a minimum of teacher direction in small groups and individually.

To help teachers adjust to these new demands and to encourage professional growth, a workshop program using readings, tapes and films designed exclusively for teacher use accompanies the course. Twenty suggested sessions built around issues of content and pedagogy constitute the substance of the workshop series that runs concurrently with the course."

[2] Films and records, readings, and continual use of classroom discussion activities stress the interaction of the visual and aural with students' manipulation of ideas through language. As brief illustrations of integrated activities, the following two examples will orient the reader. The lessons with which the course begins concern the life cycle of humans and other animals. Making life ropes of various stages in life cycles, children construct from paper and string, clips or scotch tape, a physical representation of the idea. The cycle itself is an exercise in model-building, an organizing method of viewing sequential stages of growth and development. The suggested discussion following construction of the life cycle of a human, for example, then is focused around verbal manipulation of the model, examining the common elements in the life cycles of all creatures, and the elements that may be unique to an individual and within species. The construction of a "baboon environment board" several weeks later is another integrated activity, where children work with their hands to create the visual model of an environment that expresses their symbolic understanding of baboon troop organization.

These conceptual and pedagogical goals involve specifically the following themes and methods.

I. CONCEPTUAL THEMES:

1. Life cycle (including reproduction)
2. Adaptation
3. Learning
4. Agression
5. Organization of groups (including group relationships, the family and community, division of labor)
6. Technology
7. Communication and language
8. World view
9. Values

II. DATA SOURCES:

1. Examples of Primary Sources

   Student experiences
   Behavior of family
   Behavior of young children in school
   Behavior of animals

2. Examples of Secondary Sources

   Films and slides of animals and Eskimos
   Recording of animal sounds
   Recordings of Eskimo myths, legends and poetry
   Anthropological field notes
   Written data on humans, other animals and environments

III. LEARNING METHODS:

1. Inquiry, Investigation
   problem-defining
   hypothesizing-informed guessing
   experimentation
   observation
   interviewing
   literature searching
   summarizing and reporting
2. Sharing and Evaluating of Interpretation
3. Accumulating and Retaining Information
4. Exchange of opinion, defense of opinion
5. Exploration of Individual feelings
6. Exposure to diverse aesthetic styles

IV. CLASSROOM TECHNIQUES

Examples

Individual and group research, e.g. direct observation or reading of texts

Large and small group discussion

Games

Role play

Large and small group projects such as art and construction projects

Writing of songs and poems

In the process of evaluating MACOS, we frequently encountered, from educators and researchers interested in the progress of this course, a questioning attitude with regard to its behavioral goals. Were there specified and assessable behavioral outcomes expected of the course? As the previous description clearly indicates, the course has not been framed within the confines of a behavioral psychology, nor have its developers thought specifically in behaviorist terms as they prepared and tested lessons, materials, etc.

Reading the teachers' guides or other descriptions of the course, or browsing through student materials, makes it clear that the course was developed within a humanistic framework, despite its emphasis upon an anthropological and biological introduction to the study of man and other animals, and upon sound ethnographic documentation of this study. Its organizing question, "What makes man human?" has always been asked in the broadest possible sense, and its framers, from Bruner on, have emphasized the ambience and resonance of the questions posed throughout the material.

We did attempt, however, to review various lessons of the course in terms of specified inputs and expected outcomes. Disenchantment with this method was quick. It was indeed possible to pinpoint and specify behaviors for each individual lesson; but the course as presented within such an outline lost its special power and charm. It lost its essential quality: the inclusive coherence of several powerful organizing ideas. By their specificity and attachment to a given lesson, the defined behaviors undermined what the developers expected to be the culminating objective of a theme as it recurred throughout the course. We were, in fact, reminded of William James's judgement many years ago on his own field of psychology when he declared it "a nasty little subject -- all one cares to know lies outside." There was a good part of the problem. From another perspective, one working party member who had helped to create the materials of the course and who worked through with us lesson definitions stating behavioral goals pertaining to the theme of "learning", said: "We hope that the theme of learning gives youngsters a way of considering the effect of learning on their own lives and the importance of learning to the human species. The formal way in which these behavioral goals are stated leaves little room for the importance of individual a-ha's: those moments when a child gets an idea that helps him order his experience in a new way. We can't predict what causes this to happen in any one classroom, but we know that it does. For example, as I once did the life-rope exercises* with a class, one child became fascinated with the idea that what she was learning was shaping her life, would influence her life as an adult. She began looking at what she was doing with this perspective, using the experience of other children to contrast with her own." So we returned to such specification as we have presented in this chapter, with a decision that this level of defined goals for the course presented adequate criteria for evaluation of children's learning.

The global expression of goals does not mean that we cannot expect assessable outcomes from the use of this course in the classroom. The goals described in this section are accessible to research and indeed provoke those working in educational assessment to reach beyond its traditional methodology for measuring learning, to more innovative, reflective and humane programs of evaluation.

The Evaluation Program

We have looked on the evaluation process in the most global sense as an extension of a human need: to know where one has been in order to understand where one is going; to see what was in order to see what is. The current term frequently applied to such activity is feedback -- the use of information to judge the effect of previous experience and to consolidate or change behavior.

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*Described on the previous page.

Both students and teachers need ways of summarizing and reflecting upon what has been learned if mastery and growth are to be recognized and consolidated. In addition, methods of evaluation indicate to students and teachers the ideas, attitudes and methods considered important in a course or in education generally. A basic goal of this evaluation program has been the congruence of the evaluation instruments with the objectives of the course. The range and diversity of assessments devised was intended to complement purposes and themes through emphasizing a human, child-centered methodology that fanned out to encompass the teacher in the classroom and drew from both children and teachers their best thinking about the materials.

We have found that youngsters seldom have been asked to participate in the considerations affecting the process of their own education. Yet educators expect such curricula as the social studies to provide children with resources for making decisions affecting their private and public lives as citizens. Much of this evaluation, then, is centered on youngsters' perceptions and critical insights; by eliciting from them their own ideas about the materials, we hoped also to strengthen the efforts of the curriculum to develop a student's ability to use ethnographic sources as evidence, to progress in skills of hypothesizing, analyzing and synthesizing, and to become an active and enthusiastic participant in classroom activities. A piece of curriculum cannot be evaluated realistically without understanding its impact and functioning from the student's point of view. In the past, evaluation has been too focused on teacher assessments of a course with nothing but achievement test scores as evidence of student learning.

In developing a comprehensive evaluation program, we found support in

Bruner's Toward a Theory of Instruction. He set down valuable guidelines for those with enough temerity to venture into this area. His emphasis on the "intelligence" function of evaluation, and on the importance of understanding the teacher who is teaching and the student who is learning became important components of our work. In addition, his point of view on the morality of the profession served to underscore the need to evaluate in an exploratory, thoughtful, yet disciplined manner: "The aims of the educational enterprise... center upon the problem of assisting the development of human beings so that they can use their potential powers to achieve a good life and make an effective contribution to their society. When one loses sight of that objective, both education and its evaluation become technical and sterile. The task of understanding how human beings, in fact, can be assisted in their learning and development is the central task of a theory of instruction, and techniques of evaluation derive from it in the same way that the practice of medicine derives from the medical sciences."[1]

Ralph W. Tyler, in recent comments on the famous eight-year study, also gave support to the general style we developed when he noted that "a comprehensive program of educational measurement should include an assessment of the conditions of learning if the results of the appraisal of what pupils were learning were to be adequately understood." At the December, 1966, Conference on Educational Realities of the American Management Association, Tyler further suggested that to determine the nature of a class, a constellation of student and teacher characteristics be considered, and that external influences on the class and the total learning process all be studied. Tyler went on to suggest that in this context broad objectives should be pursued, including assessment of "several kinds of behavior such as knowledge, skills, problem-solving, interests, and the like." Given objectives of this kind, Tyler noted that a sophisticated approach to evaluation is essential, and suggested the need for a variety of methods, including interviews, observations, questionnaires, performance tests and records of habits and practices.

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[1] Ibid., p. 166-67.

Instruments

How have we gone about understanding what this course means to children? How have we determined the use to which they put it, the questions it raises in their minds? We have used the interview method to understand what children make of the course, how intimately they use the materials; and classroom environment checklists to understand how, both as individuals and as groups, they view the course materials and the work they do in class. Tests helped us to judge the consistency with which a body of information was conveyed to groups of children by the materials and teaching of the course. We have no fondness for test-giving, test-taking per se, and have minimized in this evaluation the use of objective measures of learning. Pre-tests and post-tests at the beginning and end of each of the two MACOS units have served mainly as group measures to provide a standard input against which we can compare how children from different settings and grade levels are able to deal with the materials presented in the written test format.

From teachers a personal response, an individual interpretation of use and meaning have been sought. Here again, the interview has proved a flexible technique. Observing in the classroom has given us an understanding of the course-in-action on a daily basis, and has permitted an evaluation of changes in teacher style that may be attributable to the course.

The range of these methods has provided a validity that excelled that of any one technique. When several different techniques resulted in corroborating information, we began to feel confidence in the findings. Essentially, then, we have used both clinical and quantitative assessment and, in addition, we have experimented with styles for measuring objective and subjective behavior. In experimenting, we have found that the devices themselves affect the students, for our interviews and checklists seem to provide youngsters with a methodology in itself -- an approach to evaluating situations such as the classroom and their own responses to a course of study.

The Clinical Method. During the teaching of the course, we interviewed periodically a sample of students from city and suburban settings who represented all ability levels. These interviews were conducted using semi-structured open-ended leading questions. Students were interviewed either individually or in small groups by trained interviewers with the interviews recorded. When interviews were analyzed from transcriptions, they provided not only rich illumination of the more objective data, but causal explanations for the objective performance and insight into the adequacy of coverage of the objective materials.

Evaluation Checklists. Completed by all students involved in the field testing of a unit, checklists gathered information on classroom environment, student involvement and participation, success of presentation of materials through various media, reading and homework, students' assessment of their own attitudes and learning styles. Results of these checklists were tabulated by demographic sub-groups and were subjected to factor analytic techniques. In addition, the responses to open-ended questions at the end of the checklist helped us interpret the limited-choice questions. Two or more checklists accompanied each unit.

Pretests and Post-Tests. These tests stressed many attributes of student learning: reading skills, use of evidence and ability to generalize, vocabulary, graphing and mapping, interpretation of visual materials, attitudes and personal preferences. To collect this information, we used objective, essay and scale formats.

Classroom and Teacher Training Evaluation. Studying the classroom from the students' perspective, we soon learned that we had to focus also on a critical variable in the educational process: the classroom teacher. The first year's assessments of the teacher's role were culled from the students' point of view. For the last two years of field testing, we added an extensive series of classroom and workshop observations and teacher interviews to supplement the student-centered approach and to assess the effect of the MACOS teacher training program. Through classroom observations especially, we wanted to learn more about the interaction of curriculum, methods, students and teachers.

We sought subjective assessments from the teacher on the curriculum materials, classroom style, student response, and the workshop experience. Teachers were asked to define their roles and to give their views of the functioning of a unit. Coupled with this intensive material, this additional information from observer's reports of classrooms and workshops permitted us to evaluate more directly the relationship between teacher characteristics and student characteristics, with EDC curriculum materials as the catalyst.

Relationship with the Working Parties.[1] Evaluation staff members responsible for constructing the test instruments for a unit had many sessions with working party members to be sure that they understood the conceptual aims, skills, and attitudes of inquiry intended for each unit. From these dialogues and from close knowledge of the unit content, the pretests were constructed.

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[1] The term designates the group of scholars, teachers, researchers and artists responsible for the construction of a unit.

Talks with the working party members also provided information for student checklists so that from the field test samples we had profiles of response to many attributes of classroom environment, individual and class perception and reaction, teacher style and impact of materials.

Perspective of Evaluators. As we developed and carried through the evaluation program, we confronted the issue of bias or contamination of results caused by long and close exposure of staff members to the EDC philosophy and to MAN: A COURSE OF STUDY working party members. This close relationship could promote personal and subjective inclinations favoring EDC materials and result in distorted findings. Keeping this caveat constantly in mind, we realized, on the other hand, that no evaluation can be value-free. Everyone has assumptions about education and its best goals. To work freely and well in a situation, the evaluator must feel sympathy for the global intentions of the curriculum project -- in this case, creating the inquiring, interactive classroom focused around issues of man's humanness. For example, in assessing another EDC curriculum concerning the racial issue, there was never any question in our minds but that we supported the goals of that program: to promote racial understanding. Our task was to learn how, and to what degree if any, the curriculum achieved its purpose, and at the same time to shed more light on the process of learning. The task in assessing MACOS was essentially the same.

In the analysis of the collected data, several organizing questions helped give focus to the investigation. These questions are answered from many perspectives and sources of evidence throughout the report.

1. Does MAN: A COURSE OF STUDY help students learn to understand themselves and others in ways that were not accessible to them

before, and are they able to use this new knowledge in and out of the classroom?

2. Do students gain a more accurate knowledge of specific topics by using these materials?

   Are they better at using evidence (including evidence from all types of media, not only written) and observing natural and social phenomena?

   Can they go beyond specifics to some organizing conjectures about human behavior?

3. Is there a consistent style of pedagogy embedded in MAN: A COURSE OF STUDY that is identifiable by and appropriate for different types of students?

   Are the pedagogy and approach of the materials different from those of traditional social studies?

   If so, how does this **pedagogy** affect learning and class activities?

4. Do teachers' styles change in the course of teaching these materials?

5. How do the socio-economic and ability variables affect the teaching and learning of this material?

   Is the course most effective with highly verbal students, or does it work as well for students with poorer reading and writing skills?

   Does a unit function as well in the inner city as in well-to-do suburban systems?

   Are there special motivational values for disadvantaged youngsters in various media?

Background Issues

Because Jerome Bruner has been one of the few to put to paper his thoughts about learning and specifically about the instruction of young people, he has been particularly vulnerable to the criticisms of educators who find in his expressive prose and provocative ideas and insights a highly visible practice target for their own intellectual volleys. In Teaching as a Subversive Activity, for example, Post and Weingarten have raised the crucial question, "What's worth knowing?" and have faulted Bruner for failing to come to grips with this essential concern. They further question, "What will the students think about? What are the problems they will use their inquiry skills on?"[1] Since MAN: A COURSE OF STUDY is very clearly posited upon strong beliefs about what's worth knowing - the origins and meaning of man's humanity - this evaluation has tried to consider in much depth children's responsiveness to the course. Given its broad context, what issues, if any, particularly seem to trigger curiosity and a searching attitude in students? Is the question, "What makes man human?" a question that children consider worth inquiring into?

Another concern educators and psychologists have expressed is that out of Bruner's conceptual stance evolve curriculum pieces much more concerned with cognitive skills than with emotional and imaginal development. Richard Jones, in his provocative book, Fantasy and Feeling in Education, has discussed this issue at some length. His concern with "overemphasis on cognitive skills and curricular materials, and... underemphasis on emotional skills and pedagogy..."[1] is an important caution to the new social studies. This evaluation attempts to give careful thought to these facets of learning, and has used the evaluation evidence to explore students' total response to the course. When students are confronted with triggering experiences about humans and other animal species from materials on dominance, aggression, affection, dependency, do they begin to reach toward personal expressions of these motivating forces?

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[1] Post, Neil and Weingarten, Charles. Teaching as a Subversive Activity, New York: Delacourt Press, 1969, p. 54.

Regarding Jones' provocative book, we must note an important point. Out of his experience as an observer of MACOS in the classroom came his acknowledgement that without the curriculum, without the organized "rational" basis of the course, it would not be possible to come to some understandings about human behavior, including their own, which he found children could reach. The information vacuum is one of the most dangerous aspects of classrooms where teachers are almost wholly concerned with the emotional lives of their children. Children do not want to explore endlessly their own interior regions; they need grounding in the observable world of experience. Jones has clarified this point well in his chapter on "The Course of Emotional Growth" where he delineates Erik Erikson's stages of human development. He points out that achievement, industry and skill are critically important to youngsters at this age.

Unfortunately, Professor Jones did not observe classroom use of the final version of MAN: A COURSE OF STUDY. From his work with earlier versions, however, he specified the absolutely critical issue of the teacher's stance and role in supporting explorations of feelings, and in going beyond expression only, to relating the personal to the general framework of the materials; in other words, helping youngsters work toward general ground. What techniques help to relate the personal to the general, and the private experience to the public domain? Illustrations of teachers' use of the materials are used in this document to address this issue. To consider the scope and depth of children's feelings, the reader should explore the many interview protocols given in this report. They, more clearly than other evidence, help us to evaluate the emotional relevance of the course and also reveal the diversity of ways children respond to its emotional components.

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[1] Jones, Richard M., Fantasy and Feeling on Education, New York: New York University Press, 1968, p. 97.

The body of this report creates a descriptive and analytic pathway through the functioning of the course. It presents the attempt to understand that dynamic entity of a course in action that occurs at the intersection of materials, students, teachers.

The time must come, however, when in the role of evaluator, one stands back and reflects about the course in terms of its major goals and their achievement: does the course succeed on its own terms? This task is undertaken in the concluding section of the overview that follows.

Overview

A Guide to the Report

This report has been organized with the intention that its format will prepare the reader to consider the findings from the same base of evidence we had. Its magnitude has permitted us to include much of the collected data, particularly interview protocols. In this volume, following the overview, we begin by exploring a rather long section of student interviews. Many complete transcriptions are included, as well as interpretations, so that the reader can begin to develop a feel for the ways children use the ideas and materials of the course. We believe that what children have to say is interesting in its own right, and too seldom has been documented. These interviews are intended to lay the groundwork of understanding for the following section based upon quantitative analyses of group data. Test results and checklist findings are presented to demonstrate the learning gains, learning problems, and pedagogical climate related to MAN: A COURSE OF STUDY. Data on control classes are part of the checklist results. An analysis of the major variables of group data close this section, in the form of factors interpreting student learning styles in the course.

Volume Two begins with a consideration of many general issues, presenting findings about use of films, the special problems of students' conceptual mastery of the materials, and interview results from control classes and teachers. A study of the simulation games used in the Netsilik Eskimo section of the course is next, followed by a delineation and tabular presentation of classroom observation results. The critical issue of teacher education is considered through observation evidence gathered during in-service workshop sessions, and through interviews with leaders of these workshops. Teachers' views about the course close the evaluation report, with several appendices completing the volume.

This overview first presents a summary of major findings from each section, in the order of their presentation in the report.

Student Interviews

1. On the whole, students demonstrated in interviews that they learned a wealth of information; a real payoff of the scholarly research that went into MACOS is found in the great body of data that children accumulate. They were also developing methods of investigation and working with evidence, and were using the course ideas in personal reflective ways. In the process, the meaning of serious investigation grew, and the respect for "a long-term kind of thing that learning can often demand," as one teacher put it. The models of Irven DeVore, Jane Goodall and Niko Tinbergen were critical here, for they were admired scientists who were specialists in their fields and devoted their energies to long-term investigations.

2. The themes of the course having special relevance for children included the ways in which creatures reproduce, nurture, protect the young, and succeed or fail in the struggle for survival. They were also intrigued by roles various members of groups fulfill, be they members of a baboon troop or members of a human society. For example, in studying the Netsilik, they were particularly interested in the male and female roles. Almost universally, both boys and girls selected the male role as the one they would prefer to have in Eskimo society.

> ...men go out and hunt....women have to stay home and do the housework...you just stay around the house and miss all the action.

It was clear that girls saw their own lives as containing much more excitement, choice and challenge than the lives of Netsilik women.

3. One area in which the course appeared to have considerable impact is that of model-building. Conversation of youngsters revealed a growing sense of the interdependence of species members, particularly among primates, and indicated a budding model for considering human needs. The model involved cooperation, nurturance, protection, and the sharing of responsibilities. Study of the Netsilik unit

seemed to be essential for the full development of this model, but its foundation was laid in the first unit, where analogies with human behaviors were made during the animal studies, pertaining for example to differing lengths of dependency among species, and exploring the special purposes of human dependency.

4. In general, however, fifth graders did not think in models, but in terms of specific examples. They seldom went beyond specific manifestations to organizing concepts. So they needed many examples as a base for developing a general idea.

A related point is that children found it difficult to generate new examples of themes or concepts, so it was important to provide a range and clarity of examples to accompany the organizing ideas of the course.

5. In a set of follow-up interviews a year after study of MACOS, attributes of behavior, both human and other animal, were recalled by students with accuracy and a good sense of the organizing framework for considering human and animal similarities and differences. There appeared to be little carry over of methodology, however.

6. In general, children seemed to become much more aware of similarities between humans and other animals in the course of this study than they did of differences, and in this sense, there was a certain degree of "overlearning" that seemed to impede somewhat their ability to make distinctions based on an understanding of the special nature of the humanizing forces Bruner has delineated.

7. Relating both to classroom management and to peer relationships, we noted an increase in children's desire to work without the teacher's direction. As children developed a competency to work in groups independent of the teacher's help, they forthrightly expressed the desire to be freer of his or her influence. The interactive group also seemed especially valuable as a device that elicited expansion of children's ideas. By discussion and small group work, fifth graders did exchange

their views productively with one another (this was evidenced even within the group interviews), enlarging the range of each individual's thinking.

8. Children showed great awareness of the aesthetics of learning materials. They tied the ideas they were assimilating and using back to the specific style of presentation of these ideas. They were aware of textures, light qualities in films, colors and illustrations of booklets, type of print, details of format, etc. The combination used in MACOS of text and illustrations appeared to facilitate understanding, for children frequently referred to the illustrations as putting into pictures the ideas of the printed word.

Art work, illustrations and booklet style all appeared to contribute notably to a "good feeling"--a positive valence--toward the course, and drew children into the materials.

9. Children, particularly in the suburbs, were very impatient with obvious repetition in material. They were anxious to be considered mature learners, and they did not like to feel they were being subjected to blatant repetition as a learning device. Thus, some of the "saturation" techniques backfired in that they appeared to children as condescending, and provoked negative response. On the other hand, all children were disturbed by cursory run-throughs of material and wanted a sense of completeness and thoroughness of work. The satisfactions of task completion and mastery of specified materials meant a great deal to youngsters of this age.

10. Active involvement in such projects as creating the environment boards became a powerful motivator of pride in work and interest in ecological details.

11. It is interesting that the Netsilik unit proved to be the favorite of the majority of children because "it's about man." The course does not succeed as MAN: A COURSE OF STUDY without the Netsilik materials. It is in this unit that children become most speculative and reflective about the course. Teachers should take

care to pace the course so that the Netsilik study gets its full share of time during the school year.

12. There appear to be powerful instructional values in the use of ethnographic films. Boys and girls conveyed during the interviews a sense of the power of these films to make strange and unfamiliar human habits more known and thus more acceptable as part of a necessary range of human behaviors arising from human necessities and ways of life.

> There were a lot of things that I didn't like, but I don't think they should change them. Like when they took the animal and they skinned him, I didn't like that, but there's no reason why you should change it, because it's true, and that's what they did..We have to clean fish and take them apart before we have to eat them too...that's their way of living.

13. For all classes films worked a magic all their own. One student in a center city school put the value succinctly: "I like to see what I'm talking about." Another child said: "Everytime we learn something new, we should have a movie." All children made comments about the value of the films in conveying the total environment and surround of the material:

> ...you learn more about it than reading. You see how they act and in reading you just see the pictures. Like the salmon. (in reading) you don't see the way he acts, how fast he goes. They're just shown in a picture just staying there, (you have to) make believe the water's flowing by.

14. Center city children also show more motivation to read the MACOS booklets than more traditional classroom texts. In describing the "concept booklets" of the course covering such different topics as innate and learned behavior, one child in a large center city school told an interviewer:

> I like the booklets. They took a very hard question and broke it up....See, they had a question at the beginning and then they had a story to tell you about the question.

Because children do not have to depend solely on the written word, that word becomes less threatening and all-powerful. They can relax and browse through booklets, recognizing words from the new vocabulary they are acquiring and begin to view reading as a more pleasurable activity. The vivid and pertinent illustrations that accompany most of the reading materials help the child with poor reading ability to tie images to words and written ideas.

Quantitative Analyses of Learning Gains and Learning Styles

1. Analyses of test results for both units of the course indicate that children did make significant gains in learning; and these gains were significant for sub-samples controlled by various background variables such as school grade level and grade average, sex, school system, measured ability, father's education and occupation.

2. In terms of absolute knowledge, children knew a lot more of the material covered on the Man and Other Animals test as they began the unit, than they knew about the Netsilik Eskimos as they began that unit. This, of course, could be expected in light of children's high interest in animals and the general availability of information about them.

3. We separated the items on the Man and Other Animals test into four style categories and found similar improvement in score on items of each style: reasoning, information, integrative and animal. The Man and Other Animals unit does not tend to favor learning in one area at the expense of another.

4. While students in all school systems improved their scores from pre to post test on the Man and Other Animals unit more than would be expected by chance, the amount of increase differed markedly among the systems. It is interesting, however, that the pre-post test changes across systems were smaller than the differences which were found among the systems on the pre test.

5. Among the most remarkable of the findings on the Man and Other Animals test is that learning gains were not associated with students' intelligence or previous knowledge of the area. Those students with poor academic background, found so often in the center city, gained in learning and mastery over the ideas and concepts as much as those whose beginning positions were much stronger.

6. It is apparent from the evidence that where a unit dealt with happenings--descriptive aspects of behavior--children were quicker to grasp and retain the content. Where inferential or conceptual skill was called for, children found more difficulty and fell into more confusion.

7. On over-all vocabulary competence, a 30% increase, from an average 40% to an average 70% level of knowledge, was found. Certain words that recurred throughout the unit were correctly defined by over 80% of the sample (such as "structure'," "reproduction," "life cycle," "environment," "predator").

8. In the Man and Other Animals unit test, we found a great relationship between amount of reinforcement of an idea through various media and exercises, and the gain in learning that took place by the end of the unit. In the few instances where learning seemed to be going in a direction opposite to that desired, a close inspection of the course revealed contradictions and lack of clarity in the presentation, or no material directly related to that idea.

9. We cannot help but be reminded of Robinson Jeffer's admonition about poetry: never let an idea sit by itself without a presence of some sort. With elementary age children, tying an idea to an example seemed to be the most successful method for ensuring its discovery and retention, particularly when the example was conveyed

visually, verbally, and often as part of an enactive exercise.

10. The knowledge of the 4th, 5th, 6th, and ungraded students as they began the Netsilik unit was virtually identical. This differed from the pre-test results in the Man and Other Animals unit. Sixth grade students had a better grasp of primate behavior than did fifth graders, who scored higher than did fourth graders.

11. While students in all grades improved significantly on the Netsilik post test, the mean increase for sixth graders was slightly larger than for the younger students. As is illustrated in several ways in this report, some of the conceptual portions of the course were more difficult for the more immature students than they were for older students.

12. Test gains on the Netsilik test were largest for those students of highest I.Q. and least for those of lowest. The differences in gains between the low and middle and middle and high I.Q. students were small (in the first case, less than half an item difference; in the second case, two-thirds of an item difference).

13. We included the semantic differential scale in the appraisal of the Netsilik Eskimo unit, for the unit seemed to contain a large quotient of attitudinal materials. Students' perceptions of four basic concepts were tested (ARCTIC, ESKIMO FAMILIES, COOPERATION and AMERICAN FAMILIES) in a pre-post design. The most basic and most important finding is that stereotyped or uninformed views of both American and Netsilik families, cooperation and the Arctic, in general show a slight shift toward more realistic and informed interpretations. On basic perceptions of the four concepts as well as the changes after experience with the Netsilik unit, urban and suburban children's patterns of response were highly congruent. The curriculum experience, while influencing children's responses in some measure, did not make a marked change in patterns of answering the semantic differential items.

14. The responses of the students to the checklists indicated the paramount role of visual materials, particularly films, in learning and also ease and enjoyment of learning. Whenever children were given the option of selecting reading or films as favorite learning format, there was unequivocal choice of film materials. We have found this at all grade levels where honest ethnographic or documentary treatments of a topic are provided.

15. The easiest activities for children were the viewing, listening, talking modes, with the more analytic, verbal activities of expressing opinions (as differentiated from "talk" per se) and doing written work seen as most difficult. Communication skills were viewed by teachers as major growth areas and areas of important change in child behavior over the course of a year.

16. In general, checklist results showed that boy-girl differences in preference for materials or learning styles were minimal. There were slight differences in personal assertiveness apparent between boys and girls. Boys expressed less outward attentiveness in class, more independent cogitation about the ideas of the course, yet said they were more frequently "bored" and less "interested" than did girls. Boys showed more questioning attitudes, yet girls felt they must participate more in class discussions to get good grades.

17. Group work and the dyadic pattern of working with one friend were overwhelmingly preferred to solitary endeavors. Very few liked to work best with the teacher's help, or in one big group. This probably reflects the developmental level of this age group, where task accomplishment in company of peers is a particularly satisfying way of working.

18. The course also appeared to modify students' views of data sources. The book per se as the authority and source of truth diminished in emphasis. As the course progressed, MACOS pupils appeared much less inclined to rely on books as sources of information.

19. Interactive work seemed to function as an aid in better understanding. Children realized that it was not the major mode by which information and concepts were conveyed; it was, rather, an exploratory activity where ideas were consolidated, revised or expanded through the interchange of children and teacher with each other.

20. Suburban control classes revealed a pattern of class activities similar to that of MACOS students; the urban control classes showed the most clear and obvious differences in class activities compared with MACOS students. For example, the urban controls saw "answering questions" as a major way to learn. This was not true of any other sample.

21. Youngsters studying MACOS more frequently than controls selected social studies as "my favorite subject." MACOS was clearly more fun and less boring than other social studies.

22. The use of small group work in MACOS was much greater than in control classes. In fact, 63% of urban control students said they "never" worked in small groups as contrasted to 15% of the MACOS students.

23. Suburban children in control classes learned under a pedagogy quite similar to that of MACOS; but the content did not appear comparable in appeal and in involving students.

24. While the checklist findings helped us define the predominating experiences in MACOS classes, we needed a better summarizing method to learn what checklist options for several questions would cluster together to form a more holistic learning style. Factor analysis is the technique we chose to use to explore these interrelationships.

25. Using factor analysis, we were able to differentiate seven different learning styles: the discursive mode, the town meeting set, two traditional pedagogical styles, one of which was question-answer and the other projects, the eager beavers, a reading-film factor and two non-learning factors, the unpsyched and the critics.

26. Most of the factors were not associated with the ability of students; however, there were three exceptions: discursive students tended to be brighter than average while eager beavers and the unpsyched tended to be below average in measured intelligence.

27. In general there were few differences related to socio-economic background; the exception was again that of the discursives who tended to come from suburban backgrounds and the eager beavers from the center cities.

28. Those students who were not accomodated by the MACOS learning styles were those who did not participate in the interactive learning activities, or were those who did not seem to possess a minimal amount of social maturity and mental development necessary for full participation in the issues of the course.

29. The learning gains did not differ by learning style with the exceptions of the three styles, the discursives, who learned more than the average student, and the unpsyched and the critics, who learned less than the average student.

30. There are two extensions of this finding that are relevant to the area of classroom management. The first is that students enjoy learning when modern pedagogical styles are used more than they do with traditional styles and second, if the criterion of learning is broadened to include the social as well as the cognitive skills, the modern pedagogical styles would be superior teaching methods.

31. These findings tend also to reinforce a fact that all good teachers already know, that the silent student who is not engaged in the course but who could be thought of as quiet and reflective does not seem to be productive either in his own mind or in terms of his learning gains.

Issues of Media, Methods, Materials

1. As the most expensive component and basic text of MACOS, film was given special attention in the evaluation. Both center city and suburban teachers commented on the power of film to convey course material to slower youngsters. They also stressed the importance of film for its imaginal qualities and for the way its information provides a basis for raising questions and drawing conclusions.

2. The Netsilik films were particularly important in drawing students into a web of reciprocal relationships with people shown on the film, into a "shared experience." As one teacher said,

> They're not just asked to imagine information...It takes novelists, I think, to create the closeness to the study that these films do.

3. The quality and real-life footage of all the films of the course were the critical variables in the high degree of believability these films had with youngsters. Film scenes seemed to remain in children's memories as affective triggers to recall. There was an unusual degree of identification with the life presented via the film, and films worked strongly in the area of values. As Allport has so well put it, "values are simply meanings perceived as related to self..." The more it is possible to find links back to the self--to open pathways to self-reference--the more one connects with the area of values, or feelings, and thus the more intimate and important all such knowledge becomes.

4. The personalizing of knowledge is an unfailingly powerful motivator of learning. Thus, in the Netsilik unit, the stories of Eskimo lives were a particular success; while in the Man and Other Animals unit the anthropologist Irven DeVore's diary and films were especially liked. Children take enthusiastically to materials that convey a sense of human involvement

in a process of problem solving. Most textbooks are deadly precisely because the personality of the writer is conspicuously absent.

5. There seem to be different kinds of learning most distinctive to the two units of the course. The Man and Other Animals unit continually reinforces and interprets a few basic themes, while the Netsilik unit is more like the life cycle itself--a seasonal following of the lives of people. It is a life-style unit exploring the total environment, and also it is more value-based, centered as it is upon human behavior.

The most consistent learnings seem to occur in material organized as is the Man and Other Animals unit; the Netsilik unit elicits more personal, selective learning depending upon the particular interests of a child.

6. There are special problems for children in grappling with some of the larger conceptual issues of the course--particularly language, innate and learned behavior, and natural selection. Generalizations for the fifth grader seem to be almost accidental rewards drawn out of series of examples, and are for the most part categorical--"Eskimos are nomads"--rather than relational. Children's ability to master and use correctly the concepts in the course seem to depend heavily upon the quality and numerousness of examples they acquire with each major theme. On a broad base of examples, children begin to construct rudimentary general structures, and to lay groundwork for later insights and organizing ideas, as their own capacities for formal thought mature and are put in service of new experiences.

7. From observations in classrooms, one important point related to use of the inquiry method or hypothetical, question-posing mode in the classroom, seems clear: children, through question-posing and follow-up projects, can demonstrate their grasp of the conceptual and methodological framework of the course; however, for success in this area, the teacher is critical

and plays a focal role--defining tasks of investigation, guiding children in setting up working arrangements, and following through by serving as a guide for give and take about the collected data and the new questions raised. These are mediating or implementing functions that can be a new role for many teachers, one that takes some practice and some reflection to develop.

8. Interviews with students and teachers in control classes suggested some general themes which appear to be characteristic of non-MACOS classroom situations: students in these classrooms preferred a setting in which they played a fairly active role in a variety of activities, particularly sharing of ideas with one another and the teacher. Yet the majority found themselves in restrictive class environments in which they were expected to play a fairly passive role. All of the non-MACOS teachers complained of a lack of audio-visual resources related to the materials they were teaching. These control teachers often expressed dissatisfaction with their present teaching methods and a desire to change, but felt unfamiliar with newer approaches such as grouping. They seemed to want to change, but simply did not know where to begin.

9. A special research project was undertaken to determine the effects of playing the hunting games that are part of the Netsilik unit. To a sample of 585 students in one school system, pre-post tests were given which were designed to measure several dimensions connected with hunting in general and the games in particular, such as knowledge of facts, knowledge of strategy, rules and structure of the game, and attitudes toward playing.

The results clearly suggest that the hunting games in MACOS were highly successful as teaching devices. The test questions measured a variety of kinds of knowledge which were related to the game experience, and on all of these kinds of knowledge questions, the students did well. Over a series of plays, the students improved at playing the games. Attitudes toward the game experience were uniformly very favorable.

The data also clearly indicate that studying past games and planning for future ones improved the learning of most of the kinds of knowledge tested. It appears that students must reflect on their play in order to learn much from it; simply playing the game is not nearly as good in bringing about learning. When the teachers encouraged study and planning, it also improved learning.

In these games, sex was significantly associated with the quality of play, and with that kind of learning dependent on quality of play. Boys greatly out-performed girls in actual game performance. Boys were far superior in knowledge of the most effective strategies in the games.

General school performance, as rated by teachers, was not associated with learning the effective strategies of the games. Gains on all other kinds of knowledge associated with the games were significantly associated with school performance. From additional analyses, it appeared that the achievement level of the group with which one played made very little difference. This indicates that teachers may group students at their convenience.

In the Classroom: Observation Findings

1. Seldom has it been documented that materials per se have the power to change teaching methods or teacher behavior in the classroom. In a group of classrooms observed regularly during the teaching of MACOS discernible positive changes in teacher style occurred that seemed attributable to the methods and materials of the course.

2. A comparison of pre-MACOS social studies lessons and MACOS lessons of the same teachers showed that these teachers moved in the direction of an open, student-centered classroom

with the introduction of MACOS. In the MACOS lessons, teachers talked less and were less dominating; students gave longer responses, were more apt to raise issues for discussion, and engaged in more student-to-student exchanges.

A different comparison of early and late MACOS lessons did not reveal significant pedagogical differences. It appears, then, that where MACOS produces pedagogical changes, these appear early in the use of the course.

3. Comparison of observation data on MACOS and traditional social studies lessons reveals vast differences in the lives of the two sets of classrooms. MACOS sessions contain a variety of activities and learning modes; non-MACOS sessions possess great uniformity. In the latter, reading the textbook and answering questions are the major forms of activity; in MACOS groups, students more equally divide their time between reading the text, watching films, question-answer, guided discussion, and writing. Activities found in MACOS sessions which fail to occur in non-MACOS classes observed are: arts and crafts, guided discussion, open-ended discussion, role-play, and listening to records.

In terms of perceived objectives of the lessons, both groups stressed information, the non-MACOS group emphasizing information and skills more than the MACOS group. MACOS lessons often were aimed at conceptual development; non-MACOS lessons never were.

4. Examination of the verbal aspects of MACOS and non-MACOS lessons showed that the former were more apt to be pupil-centered, student-to-student interactive discussions. In MACOS classes students gave longer answers to more opinion-oriented questions, they talked to and listened to one another, and they appeared interested in the proceedings. MACOS teachers were less controlling, and they tended to draw out students more.

Similarly, comparison of items on classroom atmosphere indicates that MACOS teachers were more open in their relationship with students than were other teachers (MACOS teachers were more expressive; they were physically closer to their students).

5. Of the various comparisons made between subgroups of MACOS classes, only the differentiation between idea- and student-oriented lessons revealed significant differences. (In an idea-oriented lesson, the teacher was primarily concerned with the concepts and facts in the curriculum. The student-oriented teacher emphasized students' behavior and interpersonal relations.) Both teaching styles can be effective with MACOS materials; in a small sample, however, student-oriented lessons were closer to the MACOS pedagogic model of the student-centered, open classroom.

Teacher Education: Experiences in the Field

1. As MAN: A COURSE OF STUDY entered the phase of development where full-scale field testing was in progress, the staff acknowledged the need for a teacher education program.[1] A series of objectives has been articulated which can be summarized as follows: to provide continuing support for the classroom teaching of new material, through assisting teachers to develop the necessary informational, conceptual framework for working with the course in the classroom, and to examine and experiment with new pedagogic approaches. Beyond assisting teachers

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[1] At present, teaching of the course requires participation in in-service workshops; leaders of these workshops, which meet on some regular schedule over the course of the school year, have been trained during summer institutes in the course content and issues of the course, and have been either classroom teachers themselves, or administrative personnel from the system.

in their initial experience with MACOS, it was also hoped that the seminars would contribute to a new spirit of professionalism, counterbalancing to some degree the fragmenting and isolating tendencies of many school systems. It was hoped that the workshop would be a participatory model for the kinds of behaviors the course developers would like to see between teachers and students. To assist workshop leaders a "parallel curriculum" or set of seminars was developed; the early version covered such topics as reviewing films and readings of the course in the light of pertinent questions and classroom techniques.

2. Following Bayles, two leadership styles were conceptualized--one as idea-oriented, the other as people-oriented--and this proved a useful dichotomy in actual operation. An idea-oriented leader tends to be concerned with MACOS materials at both the factual and conceptual levels. A people-oriented leader would be more concerned with participants' behavior (in the seminar and in the classroom) and with the interpersonal relations of the group. It should be stressed that in this situation neither role is inherently better or more successful than the other.

3. What seems to be required for the successful idea-oriented seminar is deep understanding of MACOS content and the ability to convey these insights and to help participants to come to an understanding of the course. Such expertise was sometimes lacking in the observed seminars. Fulfillment of idea-oriented goals seemed easier to discern than success with people-oriented goals, since the latter often involves changing basic behaviors.

4. Certainly, the nature of the curriculum played a part in creating behavioral changes in the classroom; but the workshop program, with its consistent reinforcement of a new methodology, appears to have been necessary. One leader commented:

> Teachers have really had a new look at kids, because in the nature of this material, if you listen at all

> to children, you come out with a brand-new respect for what they have to say. And that is the area I think that we've succeeded in most....
>
> They are, I think beginning to see that they can comfortably change. But they're not going to change all at once.

5. We did seem to observe a natural rhythm to the majority of workshops. Early in the course, teachers were much more interested in specific lessons and daily planning. They wanted, and probably needed, to "get to know" the course at a fairly straightforward and operational level. As the year went on, however, and they became familiar with the teacher manuals and classroom materials, they showed more willingness and interest in looking at the course from broader perspectives.

6. Unlike MACOS classrooms, urban and suburban MACOS teacher seminars show distinct differences and these relate to group needs. It appears that teachers, in the observed suburban sample, had become acquainted with the MACOS pedagogy before actual contact with the course. That is, the teaching methods they used in other social studies curricula were similar to those found in MACOS. These teachers showed a lack of interest and participation in seminar discussions of pedagogy. Rather, they were more interested in general discussions of the content of the course: debating the values implicit in particular material, for example, or analyzing the conceptual structure of the Netsilik unit.

Urban teachers were more concerned about utilizing what tended to be a new classroom pedagogy. They wanted to talk about "how to do it" in terms of specific techniques and implications of the approach. Both groups shared a need for factual information about the course and for an opportunity to preview student material.

7. In addition to analyzing seminar programs in terms of the leader's orientation, we

correlated the success of individual sessions against sex of leader, professional status of leader, length of session, and location of school system. No significant patterns were found. In a negative way, we confirmed what other researchers have found and what educators intuitively know: no single attribute determines the effectiveness of a group.

8. Although workshop leaders as a whole did not follow closely the suggestions of the Parallel Curriculum, on the basis of the data we have obtained over the course of the past year, it is clear that in many ways the goals of the program were implemented. Workshop participants were exposed to an abundance of information requisite for an adequate understanding of the course content. The seminar also provided them with an opportunity to preview the course materials. Participants engaged in discussions of the newer pedagogy presented in the course and were given support for their endeavors in these new directions. And, for some groups, the seminars provided participants, heretofore working in isolation, with a new sense of cohesiveness and professional identity.

9. Observations of the individual seminar groups indicate, however, that no one seminar realized all of these goals. Depending on the interests of the leader and those of the participants, emphasis tended to shift in one direction, often resulting in the neglect of other areas.

10. Toward the end of the year teachers in interviews conveyed their own views about the importance of the workshop to their use of their course. Their responses indicated that they did have definite positive impact on their teaching of the course. In the workshops, leaders were invited, almost coerced by the nature of the group, to consider alternative ways of presenting ideas and managing their classes.

All reactions indicate that the value of the sessions was only related to contents. Sharing and building on the common experience of teaching the course seemed to give teachers a special interest in and enthusiasm for the workshops. The workshop situation also gave potentially controversial topics a hearing. Teachers shared with each other experiences that demonstrated that youngsters could and would work seriously on topics that some teachers had not considered appropriate for the fifth-grade classroom.

An unexpected complementariness between the teachers' guides and the workshops seemed to occur, for the workshops tended to promote more reflective teaching which offset the rather programmatic nature of the teacher guides.

> ...we get a chance to find out what kinds of things would you like to get from this discussion. But you have to ask yourself. This is great. You don't have a teacher's manual telling you what points you ought to get across. You are asking yourself what is important to you.

There was no indication that teachers did not want to attend workshops; rather, the reverse was the predominant attitude.

> I'd say the best part is the workshop we have to take. You get in there with a bunch of people, there must be 15 or 16, and there the excitement about the unit is contagious.

Interviews with Teachers

1. Many teachers, after working with MACOS for a year, came away with a new concept of skills as developed in the upper elementary grades. The skills teachers mentioned most frequently as emphasized in the course were: active listening, communicating, and sharing in group exchanges; and observing, abstracting and contrasting. The development of both the social and intellectual sets of skills was commonly attributed to the major mode of working in MACOS; oral expression, either whole-class or small group.

2. Another important shift documented by teachers was the shift from the didactic mode of teaching and learning to the interpersonal mode. Awareness of others, contact with others in the classroom on an idea level seem to be characteristics that distinguish a MACOS classroom from other classrooms.

3. Teachers selected as the most salient and exciting characteristics of the course in the classroom:

   a. Diversity of activity and materials

   b. The verbal expressiveness and the respect for others' opinions encouraged by the activities

   c. The power of the film to convey the themes of the course to promote skills of observation, and to motivate children to become involved in the ideas of the course.

4. Interestingly, they spoke less often of conceptual goals as a strength of the course than they did of materials and methods, pedagogic goals, and classroom climate. If we regard concepts and methods as two classes of behavior outcomes, we find that teachers after using the course for a year agreed that pedagogic style--interactive, communicative--was for them the most important strength of the course. They were specific in discussing

methods, while speaking more broadly and generally, and at less length, about the conceptual structure of the course.

5. Out of the interactive mode, teachers believed that children of all ability levels gained confidence in their own thinking and developed a willingness to express ideas.

6. On the whole, center-city teachers in this sample expressed a less integrated use of the course. Either they stressed expressive skills to the exclusion of content goals, or they were caught in the dilemma of authority-control concerns, where fear of (or disinterest in) student participation aborted the intentions of the course.

7. Criticisms varied from teacher to teacher; there was less consensus on negative attributes of the course than on the positive factors. The most common criticisms were that traditional skills were neglected and that independent projects were not stressed. Since the course does operate on a consensual basis in terms of class work, the lack of individualized activities was seen as a problem area by some: "If a kid isn't interested, what do you do?" Many also felt that too long a period had been allocated to the early animal studies, to the detriment of the Netsilik unit. Evaluation findings based on student responses would support this criticism.

8. Teacher manuals were almost unanimously extolled. Rather than seeking less specificity in lesson plans, first year teachers expressed appreciation for the explicitness of the suggestions and the clearly delineated continuum of lessons, many feeling they would have floundered without this guide.

9. Some first year teachers expressed their own difficulty in mastering the ideas of the course, finding the concepts complex and the amount of new material overwhelming.

In addition to the major findings just summarized, several issues need to be considered that help to answer the question, "Does the course succeed on its own terms?"

Reciprocity and Diversity

The fundamental learning style of MACOS is an emphasis upon reciprocal learning. The course in its suggested lessons mirrors closely the process by which it was constructed--not by single individuals working independently of one another, but through a group process (the working party) where approaches and ideas were exchanged and debated by scholars, teachers, artists, and researchers. From this perspective MACOS can be seen as fundamentally democratic in its operation. Translated into classroom terms, this means that the responsibility for formulating a position on questions raised by the course materials is shifted from "authority" centers--texts, teachers, lectures, didactic films--to student resourcefulness in integrating information from data sources. Ideally, the teacher in MACOS is central not as a source of "answers" but as the catalyst of events, as a model of one who explores and questions human behavior and who is visible and available to students in a mutually concerned search for understanding. Films, field research, information and concept booklets, student and teacher inputs serve as these data sources. The suggested activities do raise questions and pose problems to explore using these materials, but the materials are also intended as triggering mechanisms for student-generated questions. If the desired outcome of social studies in the schools is a totally consistent and common body of information, then the methods of this course are not the appropriate ones, for they can and should lead to some diversity on interpretation. If, however, the educator believes that knowledge about behavior is not definitive, not circumscribed, but open-ended and subject to a range of educated response, then this course makes that responsiveness possible.

> (In) the give and take of a seminar...discussion is the vehicle of instruction. This is reciprocity. But it requires recognition of one critically important matter: you cannot have both reciprocity and the demand that everybody learn the same thing or be "completely" well rounded in the same way all the time. If reciprocally operative groups are to give support to learning by stimulating each person to join his efforts to a group, then we shall need tolerance for the specialized roles that develop--the critic, the innovator, the second helper, the cautionary. For it is from the cultivation of these interlocking roles that the participants get the sense of operating reciprocally in a group.[1]

Juxtaposed against the diversity of expected outcomes is the given nature of the materials. Both students and teachers comment frequently on the "packaged" aspect of the basic data sources. This input could be viewed as the structured or programmed attribute of the course; students and teachers are presented with a sequence of activities and a set of materials such that there is no need, unless desired, to search out further material or to decide upon basic pedagogic strategy.

Is there a contradiction inherent in this situation of packaged materials and open-ended expectations? Not in operation, for the core materials are not intended to function as boundary conditions of the use to which they are put. The data of the course are not like pieces of a jig-saw puzzle where there is only one right position for any piece, but are more like paints in an artist's palette; how they are selected and used depends upon the talents and predispositions of the painter (with a corresponding range of results).

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[1] Ibid., pp. 126-27.

Social Learning

It is evident from the evaluation that MAN: A COURSE OF STUDY has been especially successful in meeting its goals for social learning. One might well judge that these goals for children are as critical in the social studies and in the social sciences in general as the more content oriented goals. The idea of a community of learning, of people actively engaged in exploring and sharing ideas together, was perceived by the majority of children and teachers as a reality and a pleasure, adding to the life of the classroom a new dimension of interactive learning.

We observed, and deduced from objective data, a range of teacher styles running from the very open to the quite traditional, but we found that on the whole, teachers seemed to utilize the general methods suggested in the teacher manuals, and to notice as a result children's increased confidence in expressing ideas, new attention to each other, and ability to communicate effectively in discussion situations. In terms of social learning, this is a notable accomplishment. It appears that the combination of curriculum materials and pedagogical suggestions worked to produce a high degree of environmental consistency in classrooms across the country. More variety of activities and materials, more small group work and open discussion; and teacher mediation and guidance, rather than dominance and authoritativeness, were the norms rather than the exceptions in MACOS classes.

An example that summarizes social learning and its impact on attitudes came from a control class situation where youngsters were using the standard school-developed social studies curriculum, but in addition using MACOS as a science or anthropology study. The teacher, interestingly, used MACOS methods for that study, but showed no carryover into regular social studies, and the children were acutely aware of the difference in learning methods. They described in an interview how they did small group work only in MACOS.

> Boy 1 ...it's easier to discuss different things in a small group than it is with the whole class. ...the other way, you just keep it to youself and say, "Well, I'm not going to tell anybody else about it."
>
> Boy 2 I know. In a way it's something like any other thing. If you're telling somebody something, they'll usually want to hear what it is. Like at first they'll say, "No, your idea is no good." Then they'll get around to, "Okay, what is your idea?"

This "approach" rather than "avoidance" attitude is encouraged by the structuring of MACOS lessons, and the kinds of questions raised by the course content. A child in the center city put it this way:

> I think when we went in small groups for discussion and we gave up our own thoughts (was best). That's all we knew about it--our thoughts. And then when the other children brought up their thoughts, we learned more.

Social learning of this type is not didactic, not second hand; it is experiential learning that comes from doing, from participating in the classroom--what we could describe as real-life learning of socially interactive skills.

This emphasis on what might be called, after Bruner, the reciprocally operative group, reflects one way of considering the learning process, one method of arranging classroom happenings and children's time in school. It emphasizes social process and consensual task completion, in that children during MACOS essentially do the same things at the same time. Thus this method which we have referred to in the report as interactive learning, can be contrasted with another style of more independent or individualized instruction, where the child works more on his own, on projects or research of special interest without the continuous flow of interaction in a class.

While we do not have research evidence to shed light on learning gains, student satisfaction in learning, or attitude development attributable to the latter method (were MACOS materials utilized in this way), it seems reasonable to suggest that the interactive mode may be a particularly felicitous mode for upper elementary age youngsters, where task orientation and working with peers are known to be pertinent concerns of youngsters at that stage of personal development. Although the interactive style of this course is one of its strengths and successes, we are not suggesting that the group focused process is the best or the only mode by which children of various ages should learn. As one's own identity as a single individual with special talents and preferences becomes of parmount importance in the adolescent years, a preponderance of consensual tasks in school may be far from the best operating style.

Both the independent or individualized and the interactive styles of educating the young, however, are quite different from a third form of teaching, that which one thinks of as traditional school learning which is more dependent, more rote, more teacher-centered and less speculative than either of the above methods. As children grow and learn, there seems to be little evidence that this third position should ever be the predominant learning method if we wish to educate thoughtful, confident, and responsive human beings.

This evaluation does raise some questions about how the community of learning functions on a day-to-day classroom basis. For example, there does appear still to be a lot of "teacher talk" in the course, despite its apparent diminution over the year's time. This would suggest the need for in-service emphasis on classroom process in interactive learning. It would be good if teachers began to recognize early their own natural propensities to talk a lot.

We also found that many of the lesson plans lead to the teacher raising most of the questions for consideration. Some modification of this focus of question-posing might be in order, as a further topic of in-service consideration.

Relevancy

It is often difficult for center city children to develop a sense of agency, of power to shape their existence, as they cope with the complex multiverse of experience that surrounds them. There are different avenues of approach in education that can be taken toward helping them develop control of their experiences.

In social studies, one could see the decision as between teaching surface or external craftiness (specific ways to function in the daily world) and teaching models for organizing experience, aiming for long-term, internalized understanding. The kinds of topics viewed as relevant under the first rubric would be dealings with police, shopping in the supermarket, how to get a specific job, etc.

The consideration of these topics can be fruitful school pursuits. But is it enough? Does it not relegate these children to the dead-end status of third-rate minds, never being challenged to develop and use models for organizing experience. As the eminent psychologist Jean Piaget has stressed, the mind is developed through use. To believe that more general and interdisciplinary education is not relevant to the center city child is to relegate a whole group of citizens to an inferior status and create a society that cannot be changed. What are the alternatives, however? MAN: A COURSE OF STUDY appears to have demonstrated one viable way--examining the most basic survival mechanisms of living creatures with a view to contrasting and comparing behavior of different species, including and emphasizing man.

Are questions arising from the study of behavioral anthropology questions that children consider worth inquiring into? Within the framework of a course such as MAN: A COURSE OF STUDY, at what points do children touch base with their own lives and concerns? The issue of relevance has been a legitimate and important one among educators, particularly as it pertains to children in the center city. Considering that these children are as much, if not more, concerned with basic dimensions of survival than are children in suburban situation, we find that MACOS has taken as its concerns:

family and social relationships
issues of dominance and protectiveness
roles of males and females
what makes a good parent
what does dependency mean
how does a group survive

It is hard to think of a set of issues more closely reflecting the psychological needs of center city children in terms of their own development and what they choose to become. Throughout the evaluation of the course, these dimensions have shown consistent power to motivate children to want to learn and to generate reflective thinking. Their interests range from the salmon to the Netsilik, but always with a personal reflection about the topics that shows the links of course materials to the child's life.

> What I liked about the salmon, they made me most curious. At first I wondered, why do you want to swim up this stream, this certain stream to lay the eggs? And...he does not know he's going to die after he reaches this point. This made me like him more. And I liked his struggle, he struggled very hard to go upstream. And sometimes they'd make it and sometimes they'd fail.
>
> If we lived in the Arctic, my father would --like the mosquitoes started biting on the little boy, and the mother tried to protect him from the mosquitoes, and she gave him a balloon to entertain him and he fished and got food.
>
> That's what they sort of mean by feelings. The Netsilik love each other...and they call each other by pet names. And they care for the young.

The course helps children to find a model for knowing themselves, for understanding basic human behaviors and how these influence lives. For example, reproduction proved to be the topic that center-city youngsters found especially personally intriguing. The course affords many opportunities for teachers and students to discuss together the topic of human and other animal reproduction, and the special qualities involved in human nurturance and care of the young, putting the topic in the context of survival of the species and purposes of dependency. It is a responsible, responsive context that appeals to the deepest needs of young people at a time when their just-budding sexuality hints at serious questions they must address. Through the study of many different groups of animals, and then through the study of a human group, the student finds value in stable environments, in continuity, in cooperation among members of the group. Interviews reveal a growing sense of the interdependence of creatures, and indicate a budding model for considering human needs, involving cooperation, nurturance, protection, and the sharing of responsibilities. It is hard to deny the relevancy of these issues. Further, the intimacy with which the course connects the social scientist to his work--the way in which materials are put together to show the time, energy, and methods a person brings to the study of a field--made strong impressions on youngsters:

> This man--Niko Tinbergen, I think it is--he made this big study on gulls. Thirty years he spent listening to the gulls.

Teachers noted that the "model" experiences coupled with the opportunity to carry on experimentation and observation on their own, helped children to understand why persistence and long-term effort can be necessary to achieve goals and find out the meanings in experience.

There is another dimension to relevance, and that is in terms of personal competency and human curiosity: learning is relevant if it makes people feel more able, more in control of situations, and possessed of more understanding about fundamental issues of behavior. Along this dimension of mastery, children express, as the course progresses, many ways in which its materials and classroom exercises contribute to competence and understanding, in which student-initiated learning is taking over from external imposition of ideas.

> Before the teacher used to always give us the answers. Now we have to find it out for ourselves in the book. (Is that harder or easier?) Easier. (Why?) Sometimes you never have questions to ask, but when you do, you write them down, then look at the film, and then you know the answer. By figuring out answers yourself, you learn more. ...when the teacher tells you all the answers, you don't hardly know because you forget.

The experimental activities of the course where children use source data to raise questions about behavior and then search for answers demonstrate the power of the inquiry method when the problems available for inquiry are of interest and are not "fake" but real data sources.

> I like (baboons) because we get to have our own machines (film loop viewers) and we get to watch film slides and we write notes about things that they do and their behavior and things like that.
>
> (How do you learn the most, through films or slides?) The slides and the machines we have. Cause you can watch them and while you're watching take notes and we watch the film over and over again and get good ideas about the stuff.

Teachers recognized this element of relevance in speaking of the scope of discussion opened up by the course and how students were using their learning outside of school, in home situations where, even in TV viewing, they felt an area of expertise, a competence, that delighted them and gave them pleasure in learning. This is personal relevance of a high order.

> Kids love to discuss things. And if the teacher can come up with the right questions or the right answers at the right time, it's tremendous. You find the discussion going all over the place. I mean, you start out with the herring gulls and territories, and you end up talking about territories all over the world. You talk about salmon laying six thousand eggs and you end up talking about population explosions in China. You talk about why animals fight with one another, and you end up talking about the war in Vietnam.
>
> ...there have been times when they have related to somebody's life line...last night when they saw the television program, "How Life Began," they were able to relate material about the herring gull and the salmon and they said, "I kept telling my father about it and I kept telling my brother about it until they said 'Keep quiet, I want to watch the program,' but we knew so much." I'm sure that was a wonderful feeling for them, that they had a great understanding about this subject.

As another child put it: "We can grow up now." This self-reflection on the ways one learns, on how one generates ideas by observation, question-posing and careful recording of information is a truly relevant skill. It is the scientific method made operational for organizing the experiences of daily life, in that it gives children workable procedure, and the opportunity to employ it over time.

One of the problems, of course, is that later school work does not always provide continuing opportunities for using these methods. When children return to traditional classrooms, or to situations where the quality of curriculum materials is far different from MACOS (perhaps more didactic, surely less complete in scholarly coverage of material, and lacking in the wonders of the films and visuals of the course), the half-life of this experience may not be long. We have done very little follow-up work, and what we did undertake did not show most youngsters addressing a newly posed problem with the methods they had learned in MACOS. We need further research of a follow-up nature; one anticipates disappointments, particularly for children who return to a school career dominated by more traditional styles of learning, to which they can either adapt or opt out.

Children have expressed in their own words many examples of MACOS materials dealing with ideas close to their own cutting edge of experience. Their overriding concern appears to be the area of relationships, for example, the child's relationship to its parents, friends' relationships with each other, a female's relationship to a male. In our work with this age group, we have repeatedly noted that they are struggling to penetrate to the meaningfulness of experience and to translate into language and image--to share through words and artistic expressions or constructions--their budding insights. They are growing in ability to separate thoughts about experience from the experience itself--to be self-conscious and reflective in behavior. They demonstrate in what they say a very personal, immediate need to understand the relational world: what leads to joy, what makes a person feel sad, what is "good" human behavior. In terms of growth, it is the integration point of the internal world with the external action that is at issue here: the great happening of adolescence--true self-consciousness.

Problems of Conceptual Mastery

We found many instances, both in tests and interviews,where there appear to be special problems for children in mastering the larger conceptual issues of the course. Youngsters have considerable difficulty in grasping the uniquely human quality of language, in identifying correctly innate versus learned behaviors in humans and other animals, and in dealing with the topic of natural selection.

The problems demonstrated in answering test questions in these areas were illustrated in interview material. For example, many youngsters were not able to make conceptual distinctions between behavior controlled by innate urges of animal species -- the internal drives that are beyond control or understanding by the animal -- and behavior governed by man's symbol system for organizing experience and creating rules of life.

Some of the problem seems to be explainable in terms of children's level of cognitive development and the accompanying need for a great wealth of good, graspable examples. Children of this age utilize in their thinking one to one correspondances and generalizations seem to be rather accidental rewards drawn out of a series of examples.

Teachers also find MACOS content new and very difficult, which further contributes to conceptual problems of children. Do teachers master the course over time? Research into long-term use would help to answer this question.

Knowing that children schooled in the suburban settings of the interviewed field sample had a history of learning with pedagogy more like MACOS methods than had children in the center city, we do not find it surprising that on the whole suburban youngsters showed more ability to elaborate an idea in conversation, to deal with conceptual themes fluently and to show a somewhat more highly developed level of formal relational thinking in their interviews. In fact, in light of the comparative observations made in city control classes indicating the lack of emphasis on opinion-giving, drawing conclusions from evidence, or hypothetical or reflective thinking, it is encouraging that center city fifth graders in the course of one year, could show growth in the communicative, reflective ways that seem to occur based on much interview material.

With the problem of language, it has been suggested and is such an intriguing idea that it is here documented, that the natural sound in the Netsilik films may be contributing to the confusion in children's minds about the special powers of human language. The stimuli of language in the film, being a foreign tongue and therefore incomprehensible, may be sufficiently ambiguous in meaning to fifth graders that they do not make the link for themselves that this "sound" coming from the mouths of the Eskimos is a unique symbol system. While it is clear from interviews that children relish and remember vividly the stories of the Netsilik, these were read in booklets, or heard on records in English translation (and most children seemed to know that it was not the Eskimos themselves speaking); thus considering again their level of cognitive development, one source of confusion about language may be that they do not easily make the abstraction from sounds of the Netsilik to language as they know it, that is, they may not be translating sounds per se into an abstract category of symbolic communication. Ergo: baboons and Netsilik may appear to be communicating in the same fashion, which is incomprehensible to students but comprehensible within the human and animal groups.

Inquiry

While the interviews show, and checklist findings indicate, children's use of inquiring attitude, hypothesizing and observing during the study of this course, it is difficult in verbal evaluations to judge how well they understand that these are approaches to problems. At this age, they are not self-conscious about the methods they are using. They do use these methods (as test results on the Man and Other Animals unit show, for example, where they can take given data on a skull and by observing and exploring this evidence, make inferences about the type of animal), but the majority have not translated the "doing" into an articulated system which they can express. The observation exercises now part of the course were introduced specifically to make explicit within the context of the child's own family, school and neighborhood, methods for data gathering and analysis.

Ethnocentrism

Since one of the learning goals of the course is "to awaken in children an awareness of the fact that what we regard as acceptable behavior is a product of our culture," the issue of ethnocentrism is important to an evaluation of the Netsilik unit.

The interview materials demonstrated that children do make links between some Netsilik ways and our own, for example, between feelings for family and friends and their way of relating to one another, and such feelings as we express them. Where basic similarities in human behavior have been grasped, children demonstrate verbally that the unit is having positive effect in creating a sense of the family of man. Do children go beyond the easy correlation of similarity, however, and begin to understand and sometimes enjoy the diversity of human behavior? To this question, we have less clear signs of growth. There is evidence that at the functional level bridging occurs. By that, we mean that the instrumental problem-solving behavior of the Netsilik elicits most favorable reaction from children as an expression of a culture different from their own, not highly technological, but very inventive. Netsilik solutions to hunting and survival needs are considered clever and functional by youngsters.

The diversities that elicit emotional responses do not so easily build to positive attitudes: the issues of infanticide and senilicide, the killing point of the hunt, the skinning of animals, and the treat of the caribou eye. For example, one scene in a film showing the food treat of the fish eye, was universally mentioned by the children who saw it as the most difficult scene to stomach, in a literal sense. There is rational understanding of such behavior, but it is not really seen as "acceptable" -- its visceral impact is too disturbing. Even the physical appearance of the Netsilik -- sallow and less groomed than our own prevailing adult standards dictate -- evokes comment about the poor, sad-looking Netsilik without much consideration of differing standards.

The Netsilik belief system, expressed in terms of logic and spirits, seems to skirt some middle ground of feeling and draws out some sympathetic and some distancing responses. The "distancing" reactions could be attributed to several factors. Children are learning the myths and beliefs of their own culture, and the magical and shamanistic system of the Eskimo is in some conflict with our scientific interpretations of the world. Eskimo beliefs, because they do carry out a "magical" view, are ridiculed by some youngsters who have themselves barely emerged from the "magical" interpretations of early childhood -- and when they do not take a position of cultural relativism, take an "adult" stand of "scientism": we have science instead of magic; we now know the answers. This is always put forth in the form of a rather easy, top of the head kind of comment. A class case study also documents that in some cases children never come to understand that myths are not literal interpretations of reality; in these cases, the teacher seems especially responsible for such misinterpretation.

However, despite some misunderstanding or skepticism and relegating of magical beliefs to a more "primitive" way of dealing with experience, many children do grasp the importance of a belief system to organizing and understanding daily life. On a word list exercise in the interviews where they select from several options the two words most important to the Netsilik in their daily lives, almost without exception children select "beliefs," and with good reasons as the interviews illustrate. One concise insight was this:

> If you believe in something, you're not afraid.

The sympathetic, even empathetic responses of some children seem to derive from emotional kinship, from delight in the imaginary, the make-believe, and the intuitively true. They feel drawn to the imaginative and perceptive qualities of the Netsilik songs and stories. It seems appropriate to emphasize these in the course. In addition, most of the Netsilik myths contain acutely realistic insights into human feelings and behavior that strike resonant chords in children. Sharing, guilt, appeasing the powers that be, all contain elements of human psychology that ring true.

It is important to note that children begin to value diverse expressions of humanness not through rational understanding of technology, social organization or cultural symbols, but through encounters with personalities and their stories, either shown on films or told through records and written material, where basic psychological dimensions are illuminated through examples specific to Netsilik culture and beliefs. Telling stories is as old as man, and clearly the impact of "Stories of Beginning Times," "Songs and Stories of the Netsilik Eskimos," of the records, and of other personal expressions can be felt in the remarks youngsters are formulating that show a good deal of sympathetic understanding.

The ethnocentric response is modulated into more catholic views, not by growing appreciation of diversity per se but by growing awareness of underlying as well as apparent similarities. The mixed reaction of children to Netsiliks was further shown in the small amount of change in their view of Netsilik families from pre to post testing on a semantic differential item. As viewed by children, there were both positive and negative valences in the Netsilik materials; that they did not move toward more positive views in the test situation could reflect this mixed response.

Different Emphases in Teacher Education

While there was considerable variation in teachers' attitudes toward and techniques of classroom management, MACOS tended to create pedagogical similarities within the wide range of classes using the course. Students' checklist responses demonstrated that urban and suburban MACOS classes were significantly more alike than were urban and suburban non-MACOS classes. Further, suburban MACOS and suburban control classes were relatively similar in terms of the pedagogy employed and general classroom atmosphere. The effect of MACOS, then, was to produce changes in the pedagogy of urban groups in the direction of an "open classroom", making the urban MACOS groups more like their suburban counterparts.

The teacher seminars may have been instrumental in effecting pedagogical changes in the urban classrooms. Though all seminar groups did some work in both the course content and pedagogy areas, urban and suburban groups differed in their stress, and this difference reflected the needs of participating teachers. As a suburban seminar leader explained, "Their (the teachers') interest is about 65% content and maybe 35% pedagogy." Judging from the student checklist data, the relatively lower interest in pedagogy stemmed from the prior familiarity of suburban teachers with the types of teaching methods stressed in MACOS. The course content, however, represented major innovation, and this was what suburban teachers wanted to discuss in meetings with their peers.

Urban teachers, in contrast, tended to view innovation of teaching style as the major function of seminar sessions. For them, the methodology in the teacher guides represented a new approach to classroom management, and they were eager to discuss questions of the "How do I do it?" variety. Many of these teachers would openly admit their fears about and lack of experience with new methodologies; for them seminars provided emotional support. Although course content was as unfamiliar to urban as to suburban teachers and both groups spent a good deal of time in the content area, there was more focus on pedagogy in the urban group.

We would suggest, then, that the different emphases of urban and suburban seminars occurred in response to felt needs, and served in the long run to produce the overall similarities of MACOS classroom teaching style that emerged. There is a hint in the data that the teacher seminars, even those in suburban situations where more time was spent on content, may still be a critical factor in all teachers' generally common interpretations of social goals of the course. Two classes of students in a suburban situation used the course without teacher attendance in any workshops. Differences in these students' perceptions of class environment compared with other suburban MACOS students' perceptions centered around type of verbal exchange, e.g. opinion giving and question raising; they appeared to do less of both. They also reported they thought less about the material than did the rest of MACOS students. These results are from a small, select sample, and can point to only tentative conclusions; they do, however, suggest that the absence of a teacher seminar may have an impact on the social learning of students in MACOS classes, for many of the interactive, affective achievements generally associated with the course experience did not take place.

Curriculum is Not Dead

The data from checklist findings suggested some especially provocative conclusions. Suburban children in control classes apparently learn under a pedagogy quite similar to that of MACOS, but the content does not appear comparable in appeal and in involving students. Bruner[1] has written that curriculum is the endeavor par excellence where the line between method and content grows necessarily indistinct. Yet suburban checklist findings indicate that this happy union does not always occur. The teachers in suburban situations, as evidenced both by these checklist findings and class observations, are likely to be using (before or without MACOS) a pedagogy involving interactive situations, but the content of the social studies is clearly more boring and uninteresting to large numbers of children than is MACOS, despite group work, discussion, and other pedagogical diversities.

Even when school systems support the open classroom, then, this in no way guarantees that the majority of children will bring enthusiasm and motivation to learning situations. Classroom management procedures per se will not energize the American classroom. Curriculum materials have a critical role to play, and quality of content seems necessary to catch students' enthusiasm; progressive classrooms focused on student participation are not in themselves sufficient.

Further, the heartland of resistance to change--the urban center classroom--responds to curriculum-methods innovation in measurable degree; students in urban MACOS classes perceive their activities in a way that is comparable to those in suburban schools. They respond to these changes by sharing with their suburban peers a new pleasure in social studies.

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[1] Ibid., p. 72.

If we have evidence that open classrooms using small group work and discussion do not of themselves generate student interest and involvement, the next question is obvious: what about the opposite case? Does innovative, substantive content utilized in a traditional way promote the same learning as such content used in the interactive classroom? We have very little evidence to answer this question. However, a class taught in this traditional style did acquire a new and workable vocabulary, but children came away with a very limited understanding of the broader concepts of the course, as well as with few of the social skills developed in other classrooms.

We are convinced from the data we have gathered that the real power of MAN: A COURSE OF STUDY derives from the integration of sound, exciting content and engaging pedagogy. From this perspective, curriculum is far from being dead; it can and has served as a focus for changing the intellectual and social climate of the classroom.

Has MAN: A COURSE OF STUDY succeeded on its own terms? Even if we consider the several problem areas mentioned, the overwhelming weight of the evidence would say yes. The materials have revitalized the social studies classroom, and their integration with an interactive pedagogy seems to serve well the upper elementary grade youngsters for whom the course was designed.

SECTION II

STUDENT INTERVIEWS

STUDENT INTERVIEWS

Introduction

We have found that the interview as a method permits a much more reflective review of a curriculum than is possible with other evaluative devices. The tempo is relaxed, the style is conversational. In the interview, the questions focus in large part on summarizing, comparing and evaluating both content and classroom processes. The interview also encourages more lengthy and exploratory answers than in class exchanges, for the teacher can seldom take the time to think through a topic with one child. In addition, it is a more personal over-all review than classroom discussion, where the child doesn't summarize in his own mind the verbal exchanges as work progresses. Class discussion is a joint effort, and a child's contribution is often piecemeal.

During the teaching of MACOS, we interviewed periodically a sample of students from classes in cities and suburbs. For each interview, trained staff used a set of prepared questions covering grasp of the material to date, both information and concepts, and including queries about happenings in class, attitudes toward various topics and sections of the course, and evaluations of the media of presentation. Samples of such questions are included in the Appendix. The interviews were semi-structured and open-ended, with given questions asked of each youngster; some of the probing follow-up questions were unique to an interview depending on the responses of a child. For any one class, three or four interviews were conducted with individual children, and a group interview with three youngsters. Children were selected who were representative of the range of abilities, interests and backgrounds in their classes.

All interviews were transcribed and content-analyzed in the manner exemplified in the following section. As we analyzed this material, we were seeking causal explanations for the objective performance of students, and insight into the dynamics of the course in the real-life situation. In addition to youngsters studying MAN: A COURSE OF STUDY, children and teachers in several control classes were also interviewed to obtain some comparative information.

One in-depth analysis of student development, two class case studies, and several interpretive reviews are included in this section of the evaluation. The development of suburban youngsters is studied first, attention is then turned to the center city, followed by an evaluation of the control group interviews. As additional data for the reader's perusal, the appendix contains a group of interview extracts giving responses to various aspects of the course.

MACOS in the Suburbs

As an in-depth study illustrating student development over time, we have selected a class of fifth grade students in a New England suburb. These youngsters represent a well-to-do segment of citizenry and have come to MACOS with what is considered good academic preparation. The system is innovative and has had a long working relationship with Education Development Center. In other words, we are taking a look at a group for whom we anticipate no special problems with reading level, articulateness, or school skills. While no situation can be ideal, what is it possible to achieve with these materials under optimal conditions? What are the strengths and weaknesses of the course as reflected in the responses of these children? They werc interviewed five or six times over the year, and abbreviated scripts of these interviews are given in this section, preceded by interpretive comments.

The teacher of this class has previously used classroom methods that are similar to those of MACOS. She is in many ways a model of her style -- the student-oriented teacher. In years, she is one of the older teachers participating in the field test, yet in spirit she displays a zest for new experiences that is not surpassed by any young teacher. Her own use of language is exceptionally vivid. She also considers herself a dedicated professional and probably more than a bit of a psychologist, judging from the emphasis she places upon interpersonal situations in the class and upon developing each child's best sense of his own competence. The greatest strength of MACOS, in her view, is that it brings youngsters to reflect upon their own behavior and their attitudes toward others.

The school these children attend is in a wealthy area of the suburb. The students are school- and achievement-oriented, and very verbal. The general atmosphere of the school conveys a sense of freedom, respect for the children, and accomplishement. The principal, concerned and capable, shows much enthusiasm for the EDC materials and often visits the class to view films, etc.

Over the year, it is consistently noted during classroom observations that the teacher is vivacious, relaxed with the children, fairly active -- walking around to student groups, standing. She speaks in a moderate voice and never shows anger, or more than the mildest displeasure toward a child. The classroom is large, cheerful, and decorated with a plethora of student work. Seating arrangements vary with particular activities, but tend to be groups of five boys and girls. Furniture is the airplane type of table with separate chairs. The children often pull their chairs over to another group or sometimes sit in a close circle around the teacher. Further descriptions of class lessons and teacher style are given on pages V 31-39.

What can be said in specific terms about the teacher's instructional style? Examination of the data obtained in nine classroom visits reveals the following positive characteristics. The observer consistently noted:

1. A sense of wholeness in the class on an emotional and physical level. The teacher often sat at the same height and close to the students.
2. Freedom of movement and expression on the part of students.
3. Little teacher talk; she never monopolized the lesson.
4. In general, at least moderate student interest in the lesson. At times there was real excitement.
5. Frequent relationship of the content of the lesson to the child's personal situation, though this, of course, varied with the specifics involved. Creating such relationships was the goal of the teacher.
6. In all but one lesson observed, there was some group work.

7. A variety of activities in succession during a typical social studies lesson; for example, individual work, group discussion, and finally a whole-class pooling of ideas.
8. All lessons observed were verbal and symbolic in nature. Children started off being basically verbal, and the teacher's expressed aim was to enhance verbal facility. Nevertheless, there was evidence in the room of enactive projects.
9. The questions asked by the teacher usually called for lengthy responses: Questions were both factual and opinion, primarily the latter.
10. Genuine discussion was a common occurrence. There was discussion for at least part of every lesson, whether as a whole class or in small groups. The ability to conduct or facilitate these conversations was the teacher's forte.

To turn now to the scripts, the reader will meet four boys and two girls. First, a group of three children whom we shall call Ellie, Kathy, and Joey. The interview scripts are presented first, each followed by a brief commentary.

December 5, 1967

Group: Kathy, Ellie, Joey

Ellie: All right, let's start from the beginning. We took a test.

Interviewer: How did you feel about that test?

Ellie: That test didn't weigh at all, becsuse we didn't know a thing about it, and she wouldn't get mad at us, if we got everything wrong.

Kathy: And mostly it was about the animals' environments, and they were in the environment, and how it helped them to live there. And their structures and behaviors, and what offspring meant, and a lot of other words.

Interviewer: Was it a hard test?

All: No.

Ellie: Tests are only hard when you know that somebody else is going to get mad at you when you don't do it right.

Kathy: We studied about how salmon reproduce.

Joey: And how long they live.

Kathy: And we made charts in the beginning. And we've always done it this way, Mrs. A., you ask all the questions on this little booklet, and then at the end of the chapter you're studying about, you have to answer them when you're all done studying about it. We did that with the salmon.

Joey: And we read all the booklets.

Interviewer: What kind of questions?

Kathy: Well, kids usually ask how many eggs do they lay, how is it usually from the sea to their birthplace, and um...

Joey: How big they are.

Kathy: How big they are and how much they weigh.

Ellie: And how they protect their own eggs.

Kathy: And howthey protect themselves.

Joey: And the males fight to mate.

Kathy: And at the end, the part we were studying about we had to answer the questions.

Ellie: And how they store food to make the long trip. And how they're born. And we saw a film that showed the steps of how they're born and...

Joey: They die after they lay their eggs.

Kathy: And we wrote poems about it and drew pictures too, to go with the poems that tell about what we have learned.

Joey: And when they're out of the eggs they still have a little pouch under their stomach, and they eat that until they're big enough.

Kathy: Yeah, they're called fingerlings, and after the winter when spring comes and the snow's away and they're ready, they go downstream -- soon they go down -- and then when they get to the ocean, they swim around. And when there's about four, maybe a little more, they swim back upstream and they go back to the top of the waterfalls...they won't go over a waterfall except on a sunny day.

Interviewer: Why is that?

Ellie: Because if they can't tell, if they want to go direct to the top, they might strain themselves on land.

Interviewer: What are they climbing up the waterfall for?

Ellie: To get back to the river, where they were born.

They know how they get to the river because if they smell ...there are certain kinds of chemicals in every kind of water and every tributary of the river.

Kathy: Then they want to get back to the place they were born and they want to spawn again, and they mate off. And the male gets savage looking and he develops a hook jaw and the female starts getting very plump because she's going to do the eggs. And then she flies...swims over the place and she drops eggs, about a thousand or two thousand at a time and the male goes over and fertilizes them. And they do this in several holes which the female digs.

Interviewer: Do you learn most of this from the films or from the booklets or the class discussion, or what?

Ellie: The film told exactly the same thing that the book did, only in different words. Like it just showed the pictures.

Kathy: And one thing good about the booklets is especially the one, the salmon.

Ellie: Upstream.

Kathy: Their going upstream is the second part. The first one about the salmon was very easy. And the pictures weren't complicated, so it was easy to get your ideas across, and then it left plenty of room for you to discuss them. Do research on your own. And if it tells too much information you're not going to go out, branch out on your own.

Interviewer: How about you, Ellie? Can you give me an example of structure and function?

Ellie: Like a herring gull has a certain structure in an instinct so that when....

Kathy: The oil on his feathers, so that when it goes down part way in the water it won't get water logged. The oil will shed the water.

Interviewer: No kidding, I didn't know that. Where did you pick up that information?

Kathy: In the book.

Joey: Yeah. The oil on their feathers sheds water, so that they can fly right up to the ground.

Interviewer: Do you find the herring gull as interesting as the salmon? I mean, I assumed you liked the salmon.

Joey: No.

Ellie: And it showed how the parents, they recognized their babies by the black spots in the back of their head, and their voices. But if the chicks grow real big and taller than the parents, when they go near the parents they have to duck, because the parents think they're enemies, cause they're large and they don't want them in their territory. So the parents can kill one of their own chicks.

Interviewer: Is it instinct, do you think, that makes the herring gull recognize his own chicks?

Kathy: No, it's remembering.. He doesn't have a large brain, I mean, compared to his size. And he still doesn't have. He's got a bird brain.

Interviewer: Did you study behavior yet?

Ellie: We studied animal behavior and human behavior.

Joey: The eye, and hearing.

Kathy: But the behavior, there was another book that had birds on the cover. That little book. And it showed that it had pictures on one page of different beaks of different birds. And then it was numbered: A,B,C,D.

Ellie: It had jawbones of animals.

Jawbones... We were supposed to guess the animals. And then there were beaks, and it was a question which one eats nuts, which one eats plants, which one eats meat.

Interviewer: How could you tell?

Ellie: Because it was the structure of the beak. And the one that eats nuts was a strong round beak.

Joey: The one that eats plants was flat.

Kathy: And we learned... they had skeletons of the head. And a horse, and a sabre-toothed tiger. And a deer. And they asked you to say which one ate plants, which ones ate tougher plants. Which ones ate tough animals, and which ones ate not so tough animals.

Interviewer: How did you find out, or did you just know?

Kathy: The book told you it to begin with. The book gave you keys. It gave you clues. And if you went back and looked, you could get more out of your clues.

Interviewer: Are there any parts that you find particularly difficult or that you dislike? Or things that you like especially about it? Anything?

Ellie: I like the salmon a lot, because it was just so natural and it was compact.

Kathy: And another thing, we haven't really gone into the herring gull yet. We just started it yesterday.

Joey: And the herring gull works on shifts all the time, to keep the eggs warm, 'cause the female herring gull feeds and eats for the young. Just before the eggs are going to be hatched, so that she can regurgitate it to them.

Interviewer: Is this instinct, or is this learned?

Joey: It's both. The mother of that one must have told it to... how to...

Ellie: That's what I wondered. Because the human mother teaches the child how to cook and to sew and to be a mother of her own children. But we have 21 years to learn it, and they only have three months. Since we don't know their language, we don't know...how they teach it.

Kathy: And this man --Niko Tinbergen, I think it is -- he made this big study on gulls.

Ellie: Thirty years he spent listening to the gulls.

Commentary

The series of interviews with a group of three -- two girls and one boy -- contains a wealth of insight into the feelings of fifth graders about school and their studies. For example, in their first interview they respond to a question on the evaluation pre-test with the following:

> That test didn't weigh at all, because we didn't know a thing about it, and she wouldn't get mad at us, if we got everything wrong.
>
> Tests are only hard when you know that somebody else is going to get mad at you when you don't do it right.

A whole philosophy of education is embedded in these young suburbanites' spontaneous summaries of testing. Their remarks do give us pause, as they reveal the sources of motivation for succeeding on a test -- avoiding the anger of the teacher -- and the burden of tension this adds to a "testing" situation.

When the group begins to talk about the questions their class is posing, and the information they are absorbing, they sound like a chorus, counterpointing one another in a continuing round. The reinforcing of various media is supported by the child who mentions:

> The film told exactly the same thing that the book did, only in different words. Like it just showed the pictures.

These youngsters have a desire to please and be successful in school and this comes out in remarks such as the comment that the booklets left plenty of room for discussion.

> And if it tells too much information, you're not going to go out, branch out on your own.

This must surely be a reflection of teacher attitudes, either present or past.

The wealth of information which they have stored up is elicited as they bounce ideas off one another. As one child thinks of an example, another picks up from there and goes on to a complementary thought or gives added details. When they discuss behavior, it is apparent that some model building is going on; they are clear about the importance of structure in determining functions, giving many accurate and interesting examples.

The course helps youngsters to develop a method of investigation and working with evidence. This is illustrated by the child who has no difficulty explaining how they were able to decide an animal's abilities by its body structure:

> The book told it to begin with. The book gave you keys. It gave you clues. And if you went back and looked, you could get more out of your class.

There are also references to human behavior, analogies to human ways, that begin to emerge in this early interview. The different lengths of dependency of herring gull and human, and the purposes of human dependency, are stated. What is also stated, and this anthropomorphism is never quite dispelled as the course progresses, is the belief in an animal language:

> Since we don't know (herring gull) language, we don't know how to teach it (the things it needs to learn).

The meaning of serious investigation begins to be understood by children as they learn about the major investigators in each study (in this case, Tinbergen): "Thirty years he spent listening to the gulls." This modeling culminates in their awed fascination with Irven Devore and Jane Goodall. Their teacher, interestingly, noted their growing "respect for a long-term kind of thing that learning can often demand," based upon the scientists who are specialists in their fields.

January 5, 1968

Group: Kathy, Ellie, Joey

Interviewer: What do you remember about the herring gull?

Kathy: The way they regurgitate. Everyone laughed when they did it.

Ellie: We saw a couple of films.

Kathy: And it was weird.

Ellie: The funniest thing was in the film when they were fighting for each other's territory. The gull didn't know what to do. So he looked down at his feet and it was so funny.

Kathy: He didn't know whether to stay in his own territory or to get clobbered.

Interviewer: What do you mean by their territory?

Ellie: They each have a territory, and if they go into someone else's, they get beaten up.

Interviewer: How do they know that they are in someone else's territory?

Joey: They eat all the grass around the territory.

Kathy: They also have to recognize other people's territory, too.

Joey: The chick has to recognize his own territory, too. They are really furry.

Ellie: We got a lot of charts - herring gull behavior no. 1 and no. 2 and herring gulls in groups. We did work from that - we turned pages one and two and did a summary about that then turned the next couple of pages and did just the meaning of that.

Kathy: We saw films about them, and the pictures.

Joey: /Description of the copper plates that they had done in class to get the feeling of the gull./

Interviewer: Which of the booklets did you like the best?

Kathy: I liked Gulls in Groups, because it told how they interact and went together and flew, and what they did at different ages.

Ellie: I also liked the Gull Behavior because that told how they react when they are alone just with the family.

Joey: I liked the first booklet - they have all the baby chicks and where they hatch from.

Interviewer: Did you enjoy the movie?

All: Yes.

Interviewer: Did you like the salmon film better?

Kathy: Well, we saw the movie twice and the salmon movie wasn't as slow. The herring gull movies isn't that hard to understand, and -- I mean, it went over too slow -- so why, I mean we got the idea and then they keep telling you about the idea, and then pretty soon you forget about the idea they were talking. You started getting so bored, they went so slowly, they didn't tell you enough - they told you alot, but they tried too hard to get the idea across.

Ellie: The salmon always moves, so it was real hard to get good pictures, but I liked the gull movies. The pictures are better, because you could get real close up.

Kathy: Yeah, and you can't get to the water in the salmon.

Joey: He explains how you can get pictures of the salmon in the water.

Kathy: I like the blown-up primate pictures. The ones under WHAT MAKES MAN HUMAN.

Interviewer: How far along are you on the baboons?

Ellie: Well, we just started, but we've done a whole lot. We brought in pictures and had slides, and we are going to see a couple of movies.

Interviewer: What was in some of these?

Ellie: General themes pertaining to the baboon.

Kathy: And they showed the stages.

/Ellie and Kathy go on to describe a picture which Mrs. A. really liked - the one with the adult male showing his canine teeth./

Interviewer: You said before that they were primates. What do you mean by that?

Kathy: It is the highest class of mammals which is the highest class of animals. I mean, we are primates; they are the smartest, they can learn the most, they don't have as much instinct. Humans have very little instinct compared to the salmon and the herring gull.

Interviewer: Can you give an example where we don't have instinct in a situation, but the salmon and herring gull do?

Joey: Well, we don't swim in a river.

Ellie: If someone asks you what is two and two when we'e born, we don't know, we have to learn it.

Interviewer: Does a herring gull?

Ellie: Well, sometimes.

Kathy: He doesn't learn it at all.

Ellie: He doesn't learn it at all.

Kathy: All he knows is that he has a certain number of chicks, and that's all.

Interviewer: How does he know that?

All: Well, he doesn't.

Ellie: We looked at some of the books - The Gulls Way, and there was another book, All About the Gulls,. and we looked at them.

Kathy: We studied them. Most of the kids learned that... They had beautiful pictures of the gulls; I really think that they were wonderful. And they had different photographs of under the mother, what it looked like, and...

Ellie: They were really good.

Interviewer: What did you think of the writing?

Kathy: I liked The Gulls Way just as I did the salmon; it tells you just the right amount of information - not too much so that you get bored, but not too little so that you still get interested. But just enough so that you want to find out about a certain part that interests you.

Ellie: While we were studying about the herring gull, we also learned a lot about other birds, because while we were talking someone would mention that such and such a bird does it also, and we would spend the rest of the time talking about that other bird.

Kathy:	Ya, I know, because all our talks just go on and on. You can start talking about herring gulls and end up talking about chairs.
Ellie:	We just have our good days and our bad days. I mean, when Mrs. A's gay (she mimics a gay hello)...
Kathy:	And when she's cross (she mimics a growl).

Commentary

The group makes it clear that the affective responses are often the linking memories that trigger recall. They remember that the herring gulls regurgitate, because "everyone laughed when they did it." The images they remember are of behavior that they interpret as emotional expressions:

> The gull didn't know what to do, so he looked down at his feet, and it was so funny.

They view such scenes in much the same way as they would respond to a comic movie. It is also noteworthy that when asked what they remember about the herring gull, their immediate responses come exclusively from the film materials.

When they discuss the booklets and their preferences, each selects different themes and sections that had special appeal. Both girls mention group and family behavior in ways that suggest that they also have human dimensions in mind as they think about gull behavior. Joey shows an interest in the birth of the young.

What happens when materials continue beyond the attention span of students is clear in Kathy's remark that in the gull film:

> They kept telling you about the idea, and then pretty soon you forgot about the idea...you started getting bored... they told a lot, but they tried too hard to get the idea across.

It is always startling when youngsters seem so aware of the pacing and presentation of materials. A bit later, Kathy goes on to praise a gull book because it contained, to her mind, the right amount of information:

> Not too much that you get bored, but not too little, so that you still get interested. But just enough so that you want to find out about a certain part that interests you.

When they discuss instinct it is notable that they have few examples at hand of situations where salmon and herring operate by instinctive behavior whereas humans don't. They find it difficult to generate, from what they have learned so far, examples that pertain to the question posed by the interviewer. They correct one another as they start to think through the question, and then finally gravitate to one lengthyexample of herring gulls, an example that is part of the information they have learned about gulls. This point is made here to stress how important it is with this age group to have a range and clarity of examples to accompany the organizing ideas or concepts in a course. As we can see by the wealth of illustration they give when it has been provided in the materials, they absorb examples and details like blotters, but cannot generate their own unless guided specifically to new illustrations.

February 1, 1968

Group: Ellie, Kathy, Joey

Interviewer: You were telling me about the test. Were you referring to just that, or what?

Kathy: No, the whole program. Like on the print you use — you use the printing to help convey the meaning. Well. I don't think you need to. It is good material, but everyone can see that baboons go around in circles, and you said this several times in the book, so I don't think that you have to repeat it.

Interviewer: Do you think that everyone in the class gets it the first time?

Kathy: Well, Group One, I think so.

Interviewer: Do you think that we should have different things...

Ellie: No, I don't think so, because it is very, very understanding, and it doesn't hurt to repeat it. It will just let — you know, the more, the better... (Joey agreeing)

Kathy: Yeah, for some kids it is good, but what I don't get is Mrs. ________. We read that book three times by ourselves...

Joey: Four.

Kathy: ...and I could memorize part of it: "A baboon is a tree-climbing monkey that lives on the ground." We know he had a callous rump. We didn't have to be told that.

Ellie: I didn't know anything, really.

Kathy: But you said it on the first page, and then on the very last page — I know he has three-dimensional eyesight; you told me once.

Ellie: But for some kids, you need to repeat it.

Joey: I don't think you should make three magazines, and the smart kids get a smart magazine.

Kathy: I don't think that that is right either. For some kids, I think that it is good to have it repeated several times.

Interviewer: Well, do you think that it is too easy, or isn't that the problem?

Kathy: No, that is a different problem. I don't think that it is easy at all for a lot of kids. But I don't get structures and behaviors. I don't have to be told that you put a tack on a chair and use it to hang something up.

Ellie: I like the first test, because you told us what an offspring was: a jump to one side. (laughter)

Kathy: Yeah. I mean now of course I know what an offspring is. It is a bunch of kids -- the young.

Interviewer: But all of you didn't know that before.

Kathy: It was so funny...

Joey: This morning we saw two movies. We saw the young baboons just born...

Kathy: Yeah, the big pink ears, and riding jockey style -- they were so cute; they were big show-offs.

Joey: The juveniles were jumping. One was in a tree; another goes up, and then a third, and then they all fall down. (group laughter)

Interviewer: You really liked that part.

Kathy: Yeah. It was so funny, we wanted to see it again, but Mrs. ________ wouldn't let us.

Joey: We are going to see it tomorrow.

Kathy: Oh, good.

Ellie: I liked the films better than anything else.

Kathy: Yeah. So did I.

Interviewer: What did you like about the films?

Ellie: You learn more from them. When you read it in a book, you have to picture it in your mind, but when you see it in the movies, you don't.

Kathy: I also think that films should have speaking with them.

Joey: They do, or some of them.

Kathy: There was for the infant, but I wanted to find out more about the juvenile. All the juvenile had was posted on the screen: "This is the first month," or nine months, or ten months. I wanted to listen and see.

Ellie: But every once in a while they would say, "Notice this..."

Joey: And then we had the sounds of the juvenile when it was running around.

Ellie: I liked the records on Dr. DeVore.

Interviewer: Did you like his book?

Kathy: Yeah. The trouble is that it is sort of long, but I liked it.

Joey: It had a lot of information.

Kathy: It was somebody else's ideas on the same thing we are studying; it wasn't just the facts. (Ellie simultaneously said the same thing.)

Interviewer: Do you think the baboon is a lot like the salmon when he first was born?

Kathy: No.

Ellie: Because a baboon has to stay with his mother. All the time, for the first week or so. After that, he goes out and then comes back.

Interviewer: What else have you been doing in class?

Kathy: I liked the cut-outs. Environment boards -- it was really good.

Ellie: We are using clay and all the materials we have.

Kathy: We make clay animals and all the animals we thought of, and that helped.

Interviewer: What goes into an environment?

Joey: All bushes and grass and giraffes.

Ellie: What I don't get is, if there is a lion or tiger on the environment board, there shouldn't be any other animals on the board, but I suppose that the environment board is supposed to stand for the whole savannah of Africa, so...

Kathy: (describes the environment board in her classroom) ...made bushes and a grove, and hid the panther so all you could see was his tail... (she was very pleased with this.)

Joey: Two days ago, we looked at some magazines and stuff and saw some lions and cheetahs.

Interviewer: Do you read other magazines at home, or at...?

Ellie: She tells us when to get magazines and when to look at home for any articles. Sometimes she doens't know what magazines they are in.

Kathy: I liked the pictures -- photographs -- which are under What Makes Man Human? The big ones on the baboon, the big show-off.

Ellie: The one showing the big one yawning.

Joey: He's not yawning. He's showing his teeth.

Kathy: I liked the cut-outs, as I said before. It shows the male baboons about half my size, but he was standing up on his hind legs.

Ellie: Yeah. They are life-size.

Joey: Yeah, they are about my size -- pretty small.

Kathy: The female is pretty big.

Commentary

The one very verbal young lady in this group interview, Kathy, had more criticisms to make of the material as the year progresses:

> I don't think you saw kids as smart as they are...you use the printing to help convey the meaning. Well, I don't think you need to. It is good material.

She also criticizes the repetition of ideas in the booklets. Her classmate Ellie, however, doesn't agree. Ellie feels that:

> I didn't know anything, really...for some kids, you need to repeat it.

Ellie, incidentally, has the highest I.Q. in the group, while Kathy's is below the norm of this suburb. There follows a brief review of the best policy for preparing reading materials. None of the youngsters wants different levels of reading difficulty for different tracks of reading abilities. Kathy's main objection to some of the reading materials is repeated here: avoid repetition and over-explanation of too-simple items.

Their response to film materials is highly positive. On the whole, this bright group of youngsters finds more to be critical about in the booklets than in the films.

> I liked the films better than anything else...You learn more from them. When you read it in a book, you have to picture it in your mind.

This is a very frequent remark made in interviews with youngsters -- they find the visual images more "complete" as a source of information.

It is important to note their response to the Field Notes of Irven DeVore because it reveals their manner of distinguishing source materials from a traditional text:

> It was someone else's ideas on the same thing we are studying, it wasn't just the facts.

The field notes conveyed the personal involvement of Dr. DeVore in his field work, just as their own active involvement in creating environment boards becomes a powerful motivator of pride in work and interest in ecological details.

The male-female dimension within the classroom, and the personalities of Kathy and Joey, are brought into the interview as it closes with a delightful, brief exchange between these two on the baboon cut-outs: "Ya, they're about my size," says Joey, "pretty small." "The female is pretty big," Kathy replies!

March 13, 1968

Group: Kathy, Ellie, Joey.

Kathy: The troop booklet is sort of silly. Sometimes it is because it says things that the other booklets said. And what you've already said, it doesn't make sense to say it all over again.

Ellie: I like this book, because it's sort of... It explains things really well, and the cut pages are nice, because you read things on each page.

I liked the ones about the baboon life. I didn't like the Structure and Function ones so much, because we talked about so much in class that when we... We talked about it before we got to the booklet and then, you know, it was just... What we talked about, we wrote, we saw.

Kathy: I liked the booklet that came with things to color in or punched out the things and fitted it together. I liked that, and I think you should make more of those.

See, the things....There were some directions on the teacher's desk saying that you could put little stands on them, and we made a whole troop. And then there was another piece of paper, and it had...it said, "Color red, a sign for male. Color so-and-so for something." But she wouldn't let us do that.

The thing I don't like is that your tests are so... Um, well, I like some of your tests, but when, you know, you have this thing saying "Your thing will be confidential and no one else will look at it except when it's evacuated ..."

Interviewer: Evacuated? Evaluated.

Kathy: Yeah, so I went to Mrs. A. and she got so angry...

Interviewer: No, Mrs. A. doesn't see them.

All: She does.

Kathy: She looks on the back and she says, "You didn't explain this" and then she looked inside and saw what I wrote for another one of the things and then she said, "Erase it." And then she got so angry and she checks on us.

Ellie: She did not!

Kathy: But she got angry.

Interviewer: Okay, can we get back to some of the films?

Kathy: Well, the baboon film, especially the one that when the... the stages, you know, how old they were in juveniles, and showing the marks and everything. But one of your films wasn't good, because it shouldn't have any noise or anything, and it was about two seconds long. And the first thing it said "One month old and one mother" and you saw "So-and-so old" and that wasn't good.

Ellie: No, I liked that film, but I think it should have been talking, because the film is good, but when you...just see behavior and you don't hear what has happened before with the same baboons - Does he do the same thing again, or does he make a different reaction to a different baboon? Even though the baboon didn't say a thing to him. I think it's better with sound.

Kathy: I thought you could hardly see it, because the whole...

Interviewer: And you did't like the Structure and Function booklet?

Kathy: No, it's too babyish.

Interviewer: How about Animal Adaption?

Ellie: Well, we liked that one, and we answered the questions that went...And I think you should have put more questions.

Kathy: Yeah, that booklet was good, and you should have put a little more questions with it, because it really helped to discuss it. Like there was one over here about two of these animals and meat-eaters, and we should have had, "What kind of meat-eater?" Or something like that. You might have things with separate questions. Because the trouble with these books is you make the print so light that you can't read it, hardly.

Ellie: Well, I liked these Field notes, but I think that you should have a booklet just of pictures like the pictures in Field Notes, but they shouldn't be like this.

Interviewer: You don't really like the cartoon type or hand-drawn pictures?

All: No.

Ellie: We like the slides.

Kathy: I liked the snilties.

Interviewer: The what?

All: The snilties. The snilty film. On adaption, you know?

Interviewer: I don't think I saw it.

Ellie: Well, the orange and green snilties, and the orange would get along better in the orange environment, and the green snilties....

Interviewer: Oh, I heard about that.

Kathy: It was a real neat film. You should have made more, because sometimes you couldn't see exactly what was going on. Especially....

Interviewer: Did you see it twice, or just one time?

Kathy: Once.

Interviewer: Well, do you think you could see it twice? Would it help?

All: Yeah.

Kathy: The idea at first you didn't get, because there was no talking, so that you had to see it.

Ellie: Most of the baboon films we saw twice, and I think that we should have seen them twice. If we'd seen them once, we wouldn't have... See, the first time we were just supposed to watch. The second time we were supposed to look for special features.

Interviewer: Okay, do you have anything else you want to say in general about the baboon unit?

Ellie: Well, on the tests they just don't explain about the baboons, but on the regular tests that they give, it says "Dear Reader," or something like that, and then they say words, and then they write "your evaluators" at the end, and then at the bottom they say, "For information, evaluators means..." Well, like you think we're babies and don't know what words mean.

Joey: And on that same test, they gave us a choice like "A jump to one side."

Kathy: That's ridiculous. If we're going to think 'offspring' is 'jump to one side'.....

Interviewer: Well, maybe some students did at some time.

Ellie: Well, the first test before we started, a lot of people did.

Interviewer: Well...

Kathy: You should make up a new test. Because we know everything that comes...

Interviewer: But we want to see if there's change, if you've learned something.

Ellie: But the old test is supposed to see... You should have the same test, to see if you've learned anything. It's not going to do any good if you have different tests.

Interviewer: So you didn't like having the same test?

Kathy: Well, if you know the answer... You knew the questions. The teacher told you that that was the test you were going to have, you knew what it was going to ask you. You knew that it's going to say so-and-so or it's not going to say so-and-so. And so you could fill it out quickly, and it's supposed to take you a whole period, and that doesn't make any sense.

Ellie: I think you should put out more tests, but not tests about how we feel about the course, but tests about the baboons and how they react. Mrs. A. doesn't make out tests for us. She uses...

Interviewer: You like to take tests?

Ellie: Yes, we do.

Kathy: No. The thing about... Not too many, but the thing is sometimes, since Mrs. A. doesn't give them, you could hardly tell, what am I supposed to be knowing and a test says, "Well, here, you better know this." And sometimes you can get the idea but you are not...you don't know...

Interviewer: You mean you've learned less because you haven't had tests?

Kathy & Ellie: No.

Kathy: But I think they...

Interviewer: You want to wrap it all up and say, "There, I know..." I see.

All: Yeah.

Joey: I think when the baboon troops come together in the range, you know, say a waterhole, that they... I think that the small troops would be nervous, because you know the big troop would just...pick them up. But I really think the small troop would be...

Ellie: At the waterhole. At the overlapping part.

Joey: I think they'd be nervous, because it said in the film they'd be nervous, and it says in the booklets that they wouldn't.

Ellie: On the tests that you do send out, you know, like, if you're going to send out now that you've heard our opinion, if you're going to send out more tests on the baboon behavior and not how we feel about the whole course, then you should put, like, more really about the baboon. Not about any other animal.

Sometimes on your tests about baboons, you say something... "How about the salmon? How about the herring gull?" Because the same question, you know, applies for all the things. And you shouldn't have...

Kathy: You know, we did so much work on the salmon, and even more for the baboons, but the herring gull, it was just hardly nothing. There were about two booklets on the herring gull that make any sense. There's a big one that has a shiny cover and it has three little booklets in it, but that's the only one I can remember.

Commentary

The importance of the teacher's respecting the confidentiality of the evaluation instruments is clear in the beginning exchange. Obviously the youngsters are disturbed when they feel the teacher reviews their checklists and suggests changes or additions.

The youngsters mention liking the active, manipulative exercises such as making a baboon troop. We notice a little growing rebellion on Kathy's part over teacher control of class activities. In the previous interview, she criticized the teacher's review of her checklist; here she rather quietly makes the statement that she knows that EDC had suggested color-coding members of the baboon troop: "But she wouldn't let us do that."

As they continue a discussion of the booklets, another comment is made about the print quality of some of the booklets: so light that "you can't read it hardly."

Their view of testing they present here is certainly in the traditional mold. They miss frequent and formal testing, because:

> What am I supposed to be knowing...and a test says, well, you better know this.

Despite the comments made in their first interview that summarized punitive attributes of testing situations, these youngsters are used to clear-cut benchmarks. It is not only teachers who ask for more frequent, formal evaluations than have so far been built into this course. In addition, there is a desire for specificity of test items; in this group there is criticism of the comparative, contrasting questions we asked on the pre-post tests. In other words, they clearly see tests as cues or guides to the "learning" that is supposed to be going on. Yet their background has not prepared them for tests that seek relationships. They cannot quite believe that they are not being prepared for a traditional test of sequential recall.

April 27, 1968

Ellie, Kathy, and Joey

Interviewer: Well, tell me something about what you've been studying that you remember.

Ellie: I like the family unit.

Joey: They make a lot of movies.

Kathy: The family unit is so closely knit together, and they're so hospitable.

Joey: They lived in igloos and things like that.

Interviewer: What do you think of Eskimos and the Eskimo way of life?

Kathy: I think it's pretty good. I like the cold, I lived in North Minnesota, and I could just walk into Canada, and so, I don't mind the cold, I think it's wonderful. It's when it gets hot that gets me.

Interviewer: What do you think about everyday life?

Kathy: I think it's pretty unique, and it's unique in some way, because the family unit...(all talk at same time)

Joey: ...and if the hunting's bad, you die. If the hunting's bad here, I mean, there's still a store. But they don't go to Stop and Shop, they go to Stop and Fire. They have to shoot to kill, and if they don't they're dead.

Interviewer: So you wouldn't like to live up there?

Joey: No.

Interviewer: Do you think they make the most of the situation?

All: Yeah.

Kathy: I think they do, because they store things, and their igloo is an extremely organized sort of shelter, because it doesn't waste any bit of space.

Ellie: I don't see how it can be cold, I mean how it can be warm inside an igloo.

Joey: Insulated.

Kathy: You know when we have our science fair in the gym, they could turn all the heat off, and it could be a hundred degrees, all the people rubbing against each other, and when you go into the covers at night, in your bed, it's not the covers that make you warm, it's you. You give out warmth. And so that's how their igloo could easily be warm.

Kathy: I read in some outside material that some Eskimos, not the Netsilik, but some don't...that live farther south, don't build their houses that way, and they use skins, and they have a piece of ice on the top and when it gets warm, it just drips, drips, drips.

Interviewer: What did you think when you heard that you were going to start on the Eskimos? Were you interested in doing that?

Kathy: When I first heard we were studying the Eskimos, I thought, "Oh, the third year!" This is the third year, good grief.

Interviewer: Do you still feel the same way?

Kathy: You know, what I thought was good, I liked the approach about the first booklet we ever saw was the one about religion, and I thought that was wonderful, except at the time, the book, reading it was awful easy material to read.

Ellie: The booklet about religion was umm, oh, what was the name of it? The weird stories.

Joey: The teacher said that everything happens, and that there is more than one way to say the earth was created, and they all happened once. (laughter)

Interviewer: What do you think of the Eskimo religion?

Kathy: I think it's sort of primitive, but I think I like the recording, and the little tales....And how it was recorded, because it was recorded well.

Interviewer: Do you think we should go in and tell the Eskimos what we think is the "real story"?

Ellie: No.

Kathy: That makes sense. Our ideas about religion are just as clear as theirs ever will be.

Ellie: The Eskimos have always been this way. The Eskimos are this way now. The Eskimos will never change.

Joey: To them it isn't funny.

Kathy: I think they will change, but the thing is, even modern man could never, never find a way to solve some of the problems that occur in the Arctic. Never.

Joey: Anyone could think up a story like the one they did. Some guy must have thought it up.....Well, Adam and Eve, that's just as kooky.

Kathy: I liked the large blown-up picture in our classroom.

Interviewer: Why do you like these pictures?

Kathy: Because they're close up, and you can go up and examine them and you can write a whole large story about every single one of them, because the photographer captured the people at such an angle that you could see almost everything about their life, but still know about just them.

Joey: I think they're kind of primitive.

Interviewer: What?

Joey: The Eskimos, I think they're kind of primitive.

Kathy: I think all Eskimos are kind of primitive. Their culture is, their society isn't very organized.

Interviewer: What do you mean by primitive?

Joey: Just plain....

Kathy: Well, they're nomads, so that puts them far behind a lot of other cultures.

Joey: That doesn't have anything to do with it.

Kathy: Yes it does, if you stay in one place.

Joey: Some people travel a lot.

Kathy: If you stay in one place and don't move with the herd....

Joey: They'd develop things, I know, but....

Kathy: ...you'll develop art, and science.

Joey: But if they did stay in one place and didn't move after their food, they'd die, and no one would find out.

Kathy: Yes, but suppose they live someplace else, then I think they would be...a more highly organized society, but because of the arctic climate, they can't. They have to be Nomads.

Joey: But is it their fault?

Kathy: It's not their fault.

Joey: Why don't they move?

Kathy: You can't transplant cultures or people.

Interviewer: Why not?

Kathy: You can, but they are not going to adapt for several thousand years.

Ellie: Man can adapt any place.

Kathy: Yeah, in a few thousand years.

Ellie: No, not in a few thousand years.

Kathy: All right, a few hundred.

Joey: No, a few days.

Kathy: Oh, yeah? You take me to a little island off the Pacific Coast...

Ellie: If you lived with the Eskimos, you'd adapt to them very quickly.

Kathy: Yeah, in generations.

Ellie: No, in a few months. You could adapt to them. Not fully, but you could live with them.

Kathy: No, you couldn't, they were born with things. You might have a child in the Arctic.. He would be a little better at the arctic ways than you would be. But like, your child's child would like be almost an Eskimo, because they had grown up that way.

Joey: Well, that doesn't take a few hundred years.

Kathy: Well, to be fully an Eskimo, it would take a bunch of generations.

Interviewer: What's an Eskimo?

Kathy: I classify it as a raw meat eater.

Joey: Uchhhh! So my dog is a raw meat eater, and he's not an Eskimo. (laughter) He wears a fur coat and he's not an Eskimo.

Interviewer: What makes him different?

Joey: He doesn't use knives and forks.

Kathy: He isn't human.

Joey: Then they all don't eat raw meat.

Kathy: I know, but the...some Eskimos do, and the Indians of North America....

Joey: They're a little more civilized than you think they are, you know.

Ellie: The people in Alaska live almost like we do.

Kathy: I know. Because they live in large towns like Fairbanks. You should go out to a little teeny weeny suburb and....

Suburb? /laughter/

Kathy: Or a country town.

Joey: Like, if you say they're raw meat eaters, how are you going to tell the difference between a dog and an Eskimo?

Kathy: Because they're human. Your dog is a dog.

Joey: You don't know. You're just classifying from primitive actions.

Ellie: Mrs. .... would tell you that definition. "I don't know a thing about Eskimos, I'm just a person. Eskimos are raw meat eaters. Does that mean my dog's an Eskimo? /laughter/

Ellie: If I didn't know anything about Eskimos or where they lived, or anything, if you classified them as raw meat eaters, I wouldn't know what they were at all. I wouldn't even know that they were human.

Joey: You have to have more descriptive.

Kathy: I think they are people who are adapted to live in the Arctic.

Ellie: Well, they probably think that you're the same thing. And you say, no there's no snow here, it's simple to live here.

Joey: I'm sure some people in the world besides Eskimos have eaten raw meat. People eat raw ... /indistinct/

Joey: Yichhh. That's like chocolate covered ants. Fried grasshoppers.

Joey: They're raw.

Interviewer: And people eat raw fish. Okay, what have you thought about the films in general that you have seen?

Kathy: The films are good.

Ellie: I think the films, the baboon films, were about the best. The Eskimos....

Kathy: The baboons?

Interviewer: You liked the baboons better?

Ellie: I liked the baboon film.

Ellie: But you can't have an Eskimo film like the baboons, because how are you going to show how he lived so long ago?

Kathy: I think it's the best you could do, but it shouldn't have been shown. It's extremely boring. /referring to Rasmussen film/

Ellie: No, it isn't boring. If you had a record, you would have to imagine it, and you'd think of the film and of how good it was. But I don't think the sketches were that good. I think it should have been color film.

Interviewer: Do you like Man and Animals films better?

Kathy: No, I don't know. I like all the films, but some of them, like Knud Rasmussen one was...it didn't show a lot. It showed him, but it said Knud Rasmussen went to Denmark where he was welcomed. The blahb-blab-a-blab-a-blab, Picture, picture, picture, picture, music, music, music, music, Knud Rasmussen went....

Joey: The music told you a lot. The music told you a lot.

Kathy: Oh, yeah.

Joey: It did. It was like Peter and the Wolf, Happy tunes, and his own tune.

Kathy: His own tune?

Ellie: The traveling part. If you didn't hear the story, you could probably tell from the music.

Commentary

This interview and the one following cover the childrens' responses to the Netsilik unit. We notice in this interview as in others, that the triggers to remembrance are often very personal. Ellie remembers and likes the pictures that were hung in the room "because one looked like my sister in first grade."

In startling manner, they tie learning to the very specific quality and style of presentation of the materials. They are even aware of the surface texture of films, of their light quality (the Rasmussen film, it seems, is so roundly denounced by this group because it has a gray, dead quality to it that to adults lends it an artistic air.) Some of their criticism of the Rasmussen film may also reflects criticism of "Journey to the Arctic." Children in this class seem to find it more boring, more hard to follow, and less involving than the DeVore journal.

Again, we notice what a good probing question will reveal about children's thinking. When Kathy exclaims that "all Eskimos are kind of primitive," the group is asked what they mean by primitive. A very good examination of the nomadic life is made here by the three youngsters. They are aware of the necessity of settling in one place for a full development of civilized society to evolve. And they note the effect of climate on the Netsilik pattern of life, and the restrictions imposed by the environment. Man's adaptability is then explored with some sophistication, and the effect of being reared in a culture is made by Kathy, who notes that a non-Netsilik child born in the Arctic:

> ...would like to be almost an Eskimo, because they had grown up that way.

Throughout, these children show outstanding ability to listen to each other, to build on their own remarks, and to carry ideas to some kind of summation and conclusion. The value of the interactive group in expanding ideas is demonstrated here, for the set of group interviews is on the whole richer than the sets of individual interviews.

June, 1968

Kathy, Ellie, Joey

Interviewer: You said you liked the second question. Does this material seem real to you? Does it seem like a true story?

Ellie: I think it does.

Kathy: Sometimes I think that when they were doing one of the films--now, they were travelling to the fishing weir or something--they looked so unnatural, because the child kept on staring back at you like there was something... something he was trying to show off, you know, because it didn't look real to me. It looked like he was just, you know, doing it in front of the camera.

Ellie: Well, he was.

Interviewer: Do you think that made the rest of the film seem less real?

Kathy: Yes, because, you see, the child, you can't blame him, because he's a kid, just like Ellie and Joey and I, but you could tell that someone was watching him very closely, or trying to direct him, because, you know, he kept on moving that way.

Joey: I thought they were pretty real.

Ellie: I thought they were pretty real too.

Joey: There weren't that many kids in the thing anyway.

Ellie: The films were the best.

Kathy: I liked the films, and the stories.

Joey: And when they kill the caribou, you're not going to get... I mean, that's gotta be real.

Kathy: I can't stand those things with Mrs. .... I'd rather read it myself.

Interviewer: How much have you read on your own?

Kathy: A whole bunch.

Ellie: She likes to let us take the books home.

Joey: *On Firm Ice*, I just read the whole thing.

Kathy: I like *On Firm Ice*, because it's so interesting.

Ellie: *A Journey to the Arctic* was so dull that I didn't even...

Kathy: I know. It was so boring, because --not all of it-- some of the things had nothing to do. I'll say the pages, such as, oh, yes, on page twenty-four, on April 13.

Joey: That's my birthday.

Kathy: The thing is, oh, Joey, the thing is that they tell about a certain group of people, and then they tell names and everything, and then all of a sudden they go on April 14, to Netsilik, and you can forget about the people you've learned on April 13. But there's a whole set of new names to learn....

Interviewer: Do you think it's the organization, then, of the book that bothers you?

Kathy: Yes. I think that no matter how he wrote it, it should have been switched around, because it's kind of hard to learn all the new names, and then forget one and then learn a custom from one set of Eskimos, forget that, go on to the Netsilik and others, and...

Interviewer: Too much traveling, in other words.

Kathy: Yes. It starts Netsilik on this page, but then on another page --I forget which one-- he...oh, *Fishing at the Stone Weir*, August 2, p. 70, you go back to the Netsilik, so it's hard to keep the Eskimos, like the Netsiliks and the other Eskimos, straightened out.

Ellie: I don't know what I'd do without *Family Winter at Camp*. And we didn't get to the main....

Joey: Because you don't know who they are, and then you hear about Sannerak, and then you don't know who Sannerak is, and then you just look at that thing on the chart.

Kathy: Yeah, that's what I like.

Ellie: We didn't get to read *The Many Lives of Kiviok*.

Interviewer: You didn't read that at all?

Kathy: Yeah, but *On Firm Ice*, I liked this book, because it had stories in it, and I like stories about them, because they seem so real and natural, and I like to settle down with these books.

Ellie: Yeah. I also really like *A Journey to the Arctic*, the chart stating the types of Eskimos. It helps me sort them out when he talks to them, because I have no idea where, you know....

Interviewer: Did any of you read The Many Lives of Kiviok?

Kathy: She didn't even tell us about it.

Interviewer: How about The Stories of Eskimos?

Kathy: Oh yes, some of the stories of the Eskimos I loved. I like their way of thinking. Beyond the High Hills is a book that EDC says to take a look at, because it has the same --some of the same-- songs and junk that this book does. I like that one. And I think that the pictures, whoever does the pictures for all of these books does a great job with them.

Interviewer: Are there any of the poems that you liked particularly in there?

Joey: Yes. I liked the big story one, Magic Words Behind the Caribou. We didn't do so well on our first two times trying hunting bow and arrow caribou, and so we had to make up our own magic words, and I liked this, because it helped me.

Ellie: I like older pictures.

Kathy: In this book about the... it tells about this fish, "a couple of years ago when I was nearly 11, --was only 10," well, the people are all mixed up, because there are too many people, and you go from one camp to the next and the names are all mixed up. You don't have time to straighten all your... but also I liked on page 17, because you can tell who this boy... this boy's a conceited something or other, and he doesn't believe much in Samek, and at the end of the story it's like he's trying to rob Eskilik. He's trying to...he's directing Samek.

Joey: But he's not robbing him.

Kathy: I know, but he's teaching them a lesson. He's directing Samek while he teaches them a lesson, whatever you want to call it.

Joey: No, he's not directing him.

Kathy: He was so. He's telling...he even tried to go back and he prevented him, huh?

Ellie: No, Samek didn't, whatever the conceited one's name is...

Kathy: Kunak.

Ellie: All right. Kunak, well, the conceited kid, we'll call him that, Mr. Conceited was trying, didn't want to go back. Samek wanted to go back. I'll show you where it says so. Where is it here?

Interviewer: Did you all like that story, though?

All: I liked it.

Interviewer: Did you read it on your own?

Joey: No, she read it out loud in class.

Kathy: Yeah, but I took it off the shelf one time, and I read the whole thing. Also, I think the pictures in the whole series are good. My favorites, though, are the abstract ones, where you have to think to find out what the picture means.

Interviewer: And where are those stories?

Ellie: On Firm Ice.

Kathy: No, not On Firm Ice as much as... I think these pictures force you to think more about the Netsilik culture.

Interviewer: **This World We Know?**

Kathy: Such as on page 2, they show... you have to think. There are like two guys, and one's giving thunder, and one's giving lightning, and you can see the Eskimo down below, but the whole way it's organized, and the snow falling everywhere, you can get the feeling.

Interviewer: Okay.

Joey: In The Arctic and Arctic Animals, this book is so filled with facts, you know. She told us, "Take a look at the whole book," you know. "Read up to the middle of the book, and then when you get to all the animals at the end of the book, summarize it and what...." And we haven't really learned summarizing. We've learned it, only it's not so much fun when you're doing it under the subject of social studies, so we, like, copied the book, and it was so boring! The facts are good, but... I could have read it on my own.

Ellie: What I used to think, with The Arctic and Arctic Animals, the last time you came in, we saw a group of kids plan the...

Interviewer: A demonstration.

Ellie: Yeah, a demonstration of seasons in the Arctic animals.

Joey: On The Arctic and Arctic Animals, in the cover, I didn't get it. On the Arctic and Arctic Animals, what is that? You know, two Arctics. What's that mean? And I couldn't get it, on the Arctic, and on the Arctic Animals.

Kathy: I think they should be separated; I think one should be The Arctic Animals and one being...

Joey: Too much trouble.

Kathy: No, one being about the stars and constellations and all like that, because the two subjects may run together; like in the cover, you can see they run together, but it's sort of confusing; you read all about how the seasons are changing, do a demonstration, and all of a sudden you jump to the animals, and you don't get any warning. I think if they were two separate booklets...

Interviewer: Okay. Can we leave the two booklets for a moment here? Because I don't have very much more time. If you were an Eskimo, would you rather be a man or a woman?

Kathy and Ellie: A man.

Interviewer: Joey, do you agree?

Joey: I'd rather be a man, because --I am one anyway-- but you can give more...

Ellie: You're more value; you're more life.

Kathy: Yeah. I wouldn't like to be killed for anyone.

Joey: We had a discussion in the class today, and we were saying that if they had a lot of boys, they might trade with another family for a girl, which I think is pretty dumb, because it's like trading a nickel for a dime. If they value the boys so much, why would they want to trade them for a girl?

Kathy: But if you had all boys, then the mother couldn't take care of them.

Joey: Why couldn't they take care of them?

Kathy: A girl's gotta take care of... look, you gotta have two women in the family.

Joey: A wife can sew as long as she wants. She doesn't have to...

Ellie: Yeah, but there are other things to think of.

Kathy: It's time-consuming.

Interviewer: But Kathy, you and Ellie said you'd rather be a man because a woman would get killed, but what if you were allowed to live, you know?

Kathy: Even if...I mean, the woman has to get up early. I like getting up early. The woman has to get up early; everyone else gets to sleep. She gets up early. She's the first one up and the last one to bed. She....

Joey: The boy has more hardships than the girl.

Ellie: But I'd rather be a man, because the woman doesn't get any sleep at night because... and the man, you know, the woman has to sew clothes for the whole family, say, you have a very large family, and it's boys, so you're not going to kill all the boys, so.... And when you're a man, all you have to do is hunt and...

Joey: *All* you have to do is hunt?

Ellie: I'd rather go out and fight and go hunting.

Interviewer: What do you think about the practice of infanticide?

Joey: What's that?

Interviewer: Killing the young children.

Ellie: Well, if it's going to be that way, it's going to be that way.

Kathy: I don't know. I wouldn't like to be killed, but...

Interviewer: Was this a common thing, or did it rarely happen?

All: Rarely.

Ellie: That's why I take it.

Joey: See, one family had three girls, and it didn't have any boys at all, and they didn't kill any of the girls. They didn't have any more children either.

Interviewer: Why didn't the Eskimos change their way of life at all?

Kathy: Because it was impossible to have central heating in a house where they...you can't even put the pipes in.

Joey: The ground is so frozen that you can't put pipes underneath, and you can't...

Kathy: Some central heating you need.

Ellie: Besides, if you're used to it, you're used to it, and you can't teach old dogs new tricks.

Joey: There's more than central heating.

Kathy: Okay. Burning coal. How do you cart the coal all the way up there from the timber line?

Joey: Land the plane and put it in the house. You could do that.

Interviewer: Is there any way they could get food, other than continuing in hunting, and to move around?

Kathy: I don't know. I think their way of life is suited to their climate very well. Some of the conveniences we have will never ever suit them, like the central heating bit; you could not get the pipes in, and they would freeze to death anyway.

Joey: Even if you could get the pipes in, the water would freeze.

Kathy: Yeah, I said that.

Ellie: And when the water freezes, the pipes **expand**... and...

Interviewer: Did they change at cue?

Ellie: Yes. They got guns. I mean, guns I consider pretty good, but they got.... Now that they've got guns, they might start killing off the whole population. So what's...

Joey: They might start killing each other.

Kathy: Yeah. I think some of the bad habits we have acquired as a culture are because of the evils that we've created for ourselves.

Ellie: Now... I mean, they didn't have crimes anywhere else, and murder was considered a family affair long ago. I mean, because in their culture it's got to be that way, but now that they've got these modern guns, they're going to find uses for it, and they'll...

Interviewer: You think they're going to have trouble.

Kathy: I think that their culture would not be ruined by the...

Ellie: Well, we did. We invaded into their country.

Interviewer: Is there any value at all in studying the way they were in 1923?

Ellie and Kathy: Yes.

Interviewer: What?

Kathy: I think...and I also think that some of these books, if possible, should have been written one or two years ago, because I liked to know how they used to live, but I also want to know how a modern girl my age...

Ellie: All we have to do is know their backgrounds from way back there in order to see the comparisons. You've gotta learn the far-back before you learn the future.

Joey: Yeah, but still, do they believe in the same things?

Kathy: Yeah. Let me say...

Interviewer: Okay. I want to show you some cards. Think of the words(fear, love, friendship, beliefs, family, dreams). Which two do you associate with the Eskimos and their life, and why?

All: Beliefs.

Kathy: I think love. Love and beliefs.

Ellie: Beliefs, beliefs.

Kathy: And something else. Family.

Ellie: No, beliefs and friendship, because you can, you know... They share...

Kathy: I don't think friendship has... They only know most of their relatives. They're almost suspicious of strangers. I think "fear," because they're almost suspicious of strangers.

Joey: Oh, but that is dumb.

Kathy: They have a fear of lightning. They're scared of things like that.

Ellie: That's a belief, that they're scared of lightning.

Kathy: Yeah, I guess so, but I take "love."

Joey: No, beliefs and family.

Ellie: Beliefs and family, or beliefs and friendship.

Kathy: I don't think so, because you can love a family, or friend, or a stranger. Love is how they're... They wouldn't have a culture if they were not that associated with love,because...

Joey: They wouldn't have a culture if they weren't family, because the man needs the wife,and the wife needs the man.

Kathy: All right. But they need love.

Ellie: They need friendship.

Joey: Friendship?

Ellie: Not to be a husband and wife, but I mean,if you say "family," you kind of associate with your friends.

Kathy: I don't think so.

Ellie: It all depends on your description of families.

Kathy: I don't think so. Actually...

Ellie: I mean, a family can be a friend, but a friend can't be a member of the family.

Joey: Yes, he can.

Kathy: Ah, I don't know. We had friends that would come over to the house, and they're just like the family, a member of the family, but they're not...

Ellie: That's friendship. It's always friendship, because...

Kathy: Well, I'm not going to be friends with my brother. I love him. I'm not going to be friends with him.

Ellie: I don't love mine.

Kathy: I'll be enemies with him any...

Interviewer: You're not friendly with the people you love?

Ellie: Yeah, but that's not me. My brother cheats in Monopoly.

Joey: My brother doesn't cheat; he just beats me up all the time.

Kathy: My brother's always...my mother says never to hurt him, because he's sort of sick, but still I don't think that has anything to do with what we're talking about, because love has...their whole culture is associated with love. If the man didn't love his wife, they wouldn't have a child, and you wouldn't have...

Ellie: But they have to live that way. They've got to have someone to support them so they will have a child. What happens when they grow old, and then... Even if they don't love each other, they're going to have one.

Kathy: But you've got to.

Ellie: You don't have to love.

Kathy: You do.

Joey: But the child is part of the family.

Kathy: Correct.

Joey: You've got to support them.

Interviewer: What's the opinion here?

Kathy: Love. Love.

Joey: I don't think so. You love your family; you don't family your love.

Interviewer: What other one would you choose, Kathy, besides love?

Kathy: I'd say, "beliefs."

Joey: And I'd say, "family and beliefs."

Illie: I'd say, "friendship and beliefs."

Joey: We've got a three-way tie here.

Interviewer: One more question. Did you see any films that made you admire the Eskimo?

Joey: The way he hunted animals; the way he hunted the caribou.

Kathy: Yes, that one, the way he cut them up.

Ellie: Yes, and his knowledge, and how he... I mean, knowing where the caribous are going to come, and then judge, "Well, you know they're going south, but where do you think they'll approximately go?" I mean, "Will they go through a narrow crossing place or a wide one?" Their knowledge for that.

Joey: I think they're just kind of, you know...I think they encourage a little kid, I mean, maybe they taste good, but when he ate that eyeball, I really got sick.

Interviewer: Is there anything that made you dislike this Eskimo?

Kathy: I think he's...he's not fickle, but he's sort of like that, because he doesn't pay any attention to the guys that do him any good. He doesn't even have very many... He's always giving food and junk, not food, but he's always giving his services to the gods who can do something for him, and he's not feeding, well, not feeding... he's not loving the gods who make happiness; he's trying to make the gods that cause hardship and junk, make them be nice to him. I think that he should make the good guys be nice to him, not the bad ones.

Joey: They already are nice.

Ellie: The story, like, when he hid the fish in the castle, he must have been... not generous.

Joey: See, there's a story about a man, and his sharing partner; it's in Stories of the Netsilik Eskimos, I think, not Stories and Songs, but just plain Stories, and he becomes friends with his sharing partner, but the man is lame, and then during caribou hunting time he's okay, you know; he's good for a kayak, or he hunts them real well, but when it comes time for the seal hunting time, he knows that he's no good, so he just leaves him out there, and the next-door neighbors take pity on him, and he turns out to be a real great seal hunter, if you take him across the ice in a sled thing, and when the guy that used to be able to hunt well with the caribou came to them, he had not had good hunting while hunting the seals, so the other guy that was lame shared with him, and they said, "Isn't it nice to have a good sharing partner?" and I thought that was really very good.

Kathy: I think that the Eskimo has a bunch of humor, but some of the ways he treats friends and junk are the exact same way we do, and I always think of them as a generous people, but...like Kunak said, "A man must decide what he has to store, and what he can afford to give away."

Joey: But I mean, seven parts of a big, beautiful trout.

Interviewer: Thanks very much.

Commentary

This final interview is truly a culminating one for the course, for it contains so much information on the way youngsters use and think about the Netsilik unit.

The first questioning we have heard about the films' veracity comes in this final group interview:

> ...traveling to the fishing weir...the child kept on staring back at you...like he was just, you know, doing it in front of the camera.

Their attention to the process of film-making -- "Someone was trying to direct him, because, you know, he kept on moving that way" -- was steady. This was noticeable in the previous interview when they voiced their disappointment with the "Knud" film because of its musical accompaniment and grey, flat quality.

As time goes on in MACOS, we find in many interview situations that children begin to voice more and more desire to work without the teacher's direction or supervision. Here, too, we begin to get comment that they would rather do things on their own. We have found that as children develop a competency to work in groups independent of the teacher's help, they forthrightly express the desire to be freer of his or her influence.

Specific criticisms are made here of the Rasmussen Journal. In contrast to DeVore's diary, this journal seems to them to jump from one thread to another in its development, changing the cast of characters without warning, and not returning to pick up all the story lines. An important point is that the youngsters like to be able to **identity** the cast of characters, and follow along with their activities over time. Their favorite reading is On Firm Ice, supporting the checklist findings that stories elicit a common, enthusiastic response from youngsters:

> I like stories because they seem so real and natural, and I like to settle down with these books.

They become very involved in stories that particularly catch their fancy, such as the one about the young boy Sunnick, their own age. They see in that story many morals that they point out.

The illustrations in the Netsilik booklets are particular favorites of Kathy, who finds that they convey "the feeling" of the story and its setting. It is interesting that Joey here takes a somewhat different tack from that of the group in the fourth interview about the value of specific testing. The class was asked to summarize the material in "The Arctic and Arctic Animals" booklet, and he decides:

> ...this book is so filled with facts...it's not so much fun when you're (summarizing) under the subject of social studies...it was so boring. The facts are good, but I could have read it on my own.

Their discussion of male-female roles among the Netsilik shows the combination of feeling and information they use to arrive at an attitude toward materials in the course. There is consensus that boys generally have more value than girls in Netsilik society. It is clear that Joey, in this case, goes along with a general attitude of male superiority:

> ...we were saying that if they had a lot of boys, they might trade with another family for a girl, which I think is pretty dumb, because it's like trading a nickel for a dime.

Both the girls and Joey see a woman's work day as longer and less interesting than the hunting activities of the man.

This is one of the rare interviews where youngsters show a glimmer of understanding about infanticide: they grasp the rareness of its occurrence, the fact that some families can have many girl babies and keep all of them.

When they discuss the ecology of Pelly Bay, they express a sound grasp of the environment and its limitations:

> I think their way of life is centered to their climate very well. Some of the conveniences we have will never ever suit them, like the central heating bit, but you couldn't get the pipes in, and they would freeze to death anyway.

Kathy, the Lucy of the group, summarizes their thoughts on the use of guns with her own interpretation of American problems:

> I think some of the bad habits we have acquired as a culture are because of the evils that we've created for ourselves.

These are budding philosophers, and they are seriously and thoughtfully piecing together the knowledge they have mastered in this unit into a general view of human behavior, and results of certain ways of life. Ellie's summary of the value of historical knowledge is to the point:

> ...we have...to know their backgrounds from way back there in order to see the comparisons, You've gotta learn the far-back before you learn the future.

The word-choice exercise (select two words from a list that you most associate with the Netsilik and their way of life) proved to be one of the most valuable interview questions. As in this interview, it elicited both reflective responses showing how youngsters were viewing Netsilik life, and also many glimpses of the ways they rèlated their knowledge to their own concerns. This group discusses with one another the distinctions and similarities in friendship and family, and they speak in intimate and frank statements about their own feelings toward siblings. There is a vivid example of their insight into behavior in Ellie's comment:

> ...(the Netsilik) have to have someone to support them, so they will have a child. (Otherwise) what happens when they grow old...even if they don't love each other, they're going to have one.

The ensuing discussion between Ellie and Kathy (can a child be born without love between the parents?) is testimony in itself that there are romantic and pragmatic interpretations of fundamental behavior within any one classroom, and that fifth graders can exchange their views with one another, enlarging the range of each individual's thinking; and certainly not taking lightly or becoming embarrassed about personal yet universal human emotions.

December 5, 1967

Interviews with Mike

Interviewer: Did you like the salmon film?

Mike: It was interesting seeing all the salmon jumping up the waterfalls. Trying to get it, and keep on trying.

Interviewer: Do they jump pretty high?

Mike: Yeah!

Interviewer: Was the film clear?

Mike: Yes, it was pretty clear. At some points it was a little worn out.

Interviewer: Could you understand the sound?

Mike: Yes.

Interviewer: Would you have wanted more information in the film?

Mike: No, not very much more. It told us a lot.

Interviewer: How about the booklets?

Mike: The booklets are the same. We read a lot in the booklets. I think we skipped a few booklets or something, but we read a lot of the books. How they grow up and reproduce, and go downstream and die.

Interviewer: Do you like the separate booklets? Do you think they're hard? Or too easy?

Mike: Not really too easy or hard. They're just good enough so that you can understand them or run through them so that you don't have to waste very much time.

Interviewer: They're easy to read, then?

Mike: Yes. They're not very easy -- like you know -- but they're easy enough for what you're trying to do.

Interviewer: Do they have answers to questions you might have?

Mike: Yes. A lot.

Interviewer: Do you find that sometimes they don't have enough information?

Mike: No. Because we put a lot of questions on the board before we get in. Then we start reading the books, and questions fell out until there were two or three more and Mrs. . . . had to answer, but that was about it.

Interviewer: What if Mrs. . . . can't answer them? Then what happens?

Mike: I don't know. But there weren't any that the book didn't include, or that she couldn't answer.

Interviewer: Did you read the book on structure and function?

Mike: Yes.

Interviewer: Can you tell me something about that? Do you remember anything about that at all?

Mike: No, I get the books mixed up.

Interviewer: Did you think that was kind of confusing for you?

Mike: No, it wasn't confusing. Oh yeah. I think I remember something about it. Yeah. Mosquitoes and other animals. Yes. I remember it.

Interviewer: What was it about?

Mike: Well, it told about that the shape of the animals or whatever they're doing makes them do what they have to do to keep on living.

Interviewer: Can you give me an example?

Mike: The mosquito. A pregnant mosquito has to suck blood for the eggs, so that the eggs will grow. And the other mosquitoes will keep on going and keep the life cycle going.

Interviewer: He's built that way so that he can do this, or what?

Mike: Yes, he's built so that he can reproduce and do whatever he has to do to keep the life cycle going.

Interviewer: Can you remember anything that you particularly liked about it?

Mike: Yeah, the information and behavior. They had animals, and they had a background of something. Flip the page and you see the animal doing something else and you flip the next page and the animal's doing something else. And you flip the page and the animal is doing the exact opposite. It's pretty funny.

Interviewer: It was sort of like a cartoon thing?

Mike: Yeah, but the backgrounds looked like they were real photos. But the other ones looked like they were just sketches that were just sketched onto the paper.

Interviewer: So it was fun?

Mike: Flipping them over and seeing what the animal would do next.

Interviewer: What types of things was the animal doing?

Mike: Like, one time, a bird saw an animal down there and he wanted it. So he sent a message to his brain and it started coming down for it. And when he got down to it, he got hungrier and hungrier. And he got down to it. It was a porcupine. I think it was. And it spread out its quills and all of a sudden the bird goes /makes sound/ Like a car going real fast to a dead end street and then stopping all of a sudden.

Interviewer: What went wrong?

Mike: After the quills went up, he didn't like it very much. He wasn't very hungry anymore.

Interviewer: What do you think had happened? He saw something there that had made him hungry.

Mike: And then when he came down . . when the quills shot up he had to protect himself and he didn't want to be hurt, you know, with all the quills. So he stopped short.

Commentary

Mike, in his first interview, starts out with a refrain heard over and over about the salmon, especially from boys:

> It was interesting seeing all the salmon jumping up the waterfalls. Trying to get it, and keep on trying.

He feels the reading level in the booklets is right for him. There are children who do not show an unquenchable curiosity and sense of unfinished business while studying this course, and Mike, judging from his interviews, seems to be one of them. For example, he feels that all of the questions he and the class had were answered.

While he mentions getting the specific content in each booklet "mixedup" in his own mind, and does indeed give an example (the mosquito) from another booklet to illustrate material from the "Structure and Function" booklet, his description of the adaptive structures and behavior of the mosquito are quite accurate and show a good use of the vocabulary of the course. This is a good example of the general nature of important knowledge: a booklet-specific test asking for recall of information might have shown Mike to be "wrong" or not knowledgeable; yet he has a good understanding of the concept of structure and of adaptive functioning which is brought out in the interview.

When he discusses another concept booklet, "Information and Behavior," it is the page lay-out and the humor he finds in the drawings that engage his attention. Then he proceeds to give, in good detail, the story of one of the animals as presented in the booklet. Obviously, the format and method of conveying information visually, in an example unfolding through a series of drawings, contributed much to this child's retention of an idea -- in this case, how conflicting signals about the environment produce a change in an animal's behavior.

January 5, 1968

Interview with Mike

Interviewer: Did you see the movie on the herring gull?

Mike: Yes.

Interviewer: Did you like that?

Mike: Yes.

Interviewer: Well, did you like the salmon better?

Mike: Well, the salmon looked like it had much more activity than the herring gull.

Interviewer: You like things with action?

Mike: Yes.

Interviewer: Can you describe to me what the difference is between innate behavior and learned behavior?

Mike: Well, with the learning of behavior, it's different because usually they have to go through an experience to learn it. But when they have it innate, they just know so that they don't have to go through it.

Interviewer: Can you give me an example?

Mike: Well, when a baby chick's born, sometimes they don't know their own territory, so they have got to find out the hard way. They go wandering around being chased back and everything, and pretty soon they know. But if they have the natural instinct that tells them that their territory is so far, then they won't have to get hurt.

Interviewer: What kind of instinct do they have? I mean, can you give me an example of herring gull instinct where he doesn't have to learn the hard way?

Mike: Yes, when he picks on the red spot in front of his feet.

Interviewer: Do you think if an animal's environment changed, that he would have to change in order to continue to live there?

Mike: Yes.

Interviewer: Can you think up an example for this or something?

Mike: Well, we saw a film on the sniltie s, and . . .

Interviewer: What are the snilties?

Mike: Well, I don't really know. I think they might have been a make-up animal, or a real live animal that I never heard of before. And they showed snilties, and they were born different colors at different times of the year. And one was blue, and the grass was dyed sort of like it. Or yellow. Yellow was for orange, so that they wouldn't be found. And then you'd see a predator come down and scoop up the blue ones. And then you'd see later on a blue one with green grass, you know, and then the orange ones would go by, and then you'd see the predator coming and scooping up the orange ones. So that means if they don't adapt to their kind of environment, they won't live too long.

Interviewer: I see. That's very interesting. I never heard of . . . snilties, you say?

Mike: Yes.

Interviewer: Is there anything that you didn't like about the unit at all? Or something that you did particularly like?

Mike: No, not really. We saw a lot of films. We didn't read the books much.

Interviewer: Did you like the films?

Mike: Yes.

Interviewer: Sort of?

Mike: Yeah, because they did have a lot of action.

Interviewer: Right, and you like the action. Okay, do you have any other comments you want to make? No? What do you think Mrs. . . . . likes best?

Mike: Well, I think she's going to . . . I think she likes the baboons best.

Interviewer: Do you think for the same reasons you do?

Mike: I don't know.

Interviewer: Okay, fine, Mike. Thank you.

Commentary

The second interview shows that Mike is able to take the ideas of the course, translate them into his own language, and give them back as general organizing concepts. While it isn't clear to him that the snilty[*] used to illustrate natural selection is an imaginary animal, Mike's summary of the snilty slides is clear and to the point:

> ...if they don't adapt to their kind of environment they won't live too long.

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[*] an exercise now omitted from the course.

[illegible] [illegible]ool [illegible]
March 13, 1968

Interview with Mike

Interviewer: How did you like the booklets with the films that you saw?

Mike: Well, the films were good, because they had all the animals walking around in their natural behavior, and the books were good, because they had, like in baboon communication, they caught some of the animals as a regular thing, as in the regular behavior, so it made them both work very good.

Interviewer: What book do you think you liked the best?

Mike: That book. On communications.

Interviewer: You liked that book on communication?

Mike: Yeah.

Interviewer: What did you like about it?

Mike: I don't know. I just liked the way they were communicating. How they would grunt when they wanted something or groan at the troop monarch when they were playing around and they didn't want to go after him. Or humming sounds when they were being groomed. And how they were when they got very mad.

Interviewer: You found that most interesting?

Mike: Yeah.

Interviewer: What do you think of the pictures? Do you like them? This kind of picture or what? And the reading, you said you didn't have any difficulty, right?

Mike: Yes. I like the other kind of pictures -- you know, the photos.

Interviewer: In the Notes, or in there?

Mike: In here and in the Notes.

Interviewer: How about this one, the Innate and Learned Behavior?

Mike: No, we didn't have that book.

Interviewer: And how about Information and Behavior?

Mike: Yes, we had that book. This is the one that I was talking about snapshots and everything. Let's see. Here.

Interviewer: What about the snapshots?

Mike: Well, half the pictures were what they drew up and then part of the pictures were snapshots. And I like the way that they did it.

Interviewer: What: the snapshots or the two different types of things?

Mike: The two different types of things. I liked the real background with the animal that they drew on.

Interviewer: Oh, you liked that?

Mike: Yeah.

Interviewer: Do you have anything else you want to just say in general about the booklets or anything?

Mike: They were very easy to read. They were good. So it didn't take you too much time on one booklet. Or if you wanted to go into detail on one thing, since the reading was nice and easy, you could just go by and see what they were talking about in the photos. So it was very nice. You could just go right through a book.

Interviewer: Would you like anything changed about them? Or would you give it to your friends to read just the way it is?

Mike: Give it to a friend to read just the way it is.

Commentary

The manner in which youngsters integrate the aural and written materials of the course is illustrated in Mike's liking of the booklet on baboon communication. Without consciously recognizing it, he is tying the material in the booklet to the record of baboon sounds and to the films he has seen:

> I just like the way they were communicating. How they would grunt when they wanted something, or groan at the troop monarch when they were playing around and they didn't want to go after him. Or humming sounds when they were being groomed. And how they were when they got very mad.

These are all expressions of feeling states that are highly appealing to this child. He has taken written and audio-visual materials and integrated them into his recollection.

Like other youngsters, he notices the visual illustrations in the booklets and the way they are put together. "I liked the real background with the animals they drew on." He again mentions how comfortable he finds the reading level, and how the combination of illustration and text facilitates his understanding of the material.

May 6, 1968

Interview with Mike

Interviewer: What do you think of what you've been doing with the Netsilik unit?

Mike: We've been reading alot in the Journey to the Arctic . . . that's Rasmussen's journal . . . and we've been writing a lot in our Journal.

Interviewer: What kind of journal do you keep? What do you say in it?

Mike: Well, we've got these booklets, and every day that something happens, we always write in our booklets so we can keep a track of what is happening.

Interviewer: Do you like doing that?

Mike: Yes.

Interviewer: Do you like having your own personal diary?

Mike: Yes.

Interviewer: You saw some films, didn't you? Can you tell me about them?

Mike: Well, we saw "At the Fish Weir," and we saw something like . . . something about the Caribous, and we saw one about a family taking a trip across the Tundra, and we saw a couple about the family that I don't remember.

Interviewer: What do you think of them?

Mike: I think they're good . . . they included a lot of information.

Interviewer: A lot of information about what?

Mike: Well, it depends on what the movie's about. Like at the Fish Weir, they showed a family traveling until they got to the right place where they were going to build their weir. Then they showed all the mosquitoes almost eating them alive. Then they showed them taking their weapons and going down and building up the weir. And then, waiting until the fish came in, and then killing all the fish. Then they had sort of like a string . . . and they put all the fish on the string and put the string in their mouth, and that was how they held the fish. Everytime they saw another fish come by they'd lean back their spear, I don't know what it was called . . . a leister, or something like that . . . . which had three sharp points and they'd stab them into the fish and take it out, and put the fish on the string and put the string in their mouth.

Interviewer: Do you know why they did that?

Mike: So everytime they caught a fish, they wouldn't have to take them over and put 'em on the shore...and so they didn't have to waste as much time.

Interviewer: What do you think about the Eskimos?

Mike: Well, I like studying about them.

Interviewer: What do you like about that?

Mike: Well, I think they had...their customs seem pretty funny around here, but you know, they make sense for their environment. They have to do this to survive.

Interviewer: Can you give me an example of what you mean by that?

Mike: Ummm....

Interviewer: I think I understand what you mean, but what would we think was strange or something that they...this..., and if they do, it's because of environment?

Mike: Well, you might think that it's strange that when a mother's having a baby, that she goes off all alone into a special tent outside the village where there's nobody around. But that doesn't have to do with anything about the environment. Ummm....

Interviewer: But that's on a lot of their superstitions.

Mike: Yes.

Interviewer: Do you think the superstition that's explained is very interesting?

Mike: It's interesting, but I couldn't really say they're crazy.

Interviewer: Do you think we ought to go and tell them what's right?

Mike: No, because we don't have any real proof that we're right.

Interviewer: Do you think these films are as good as, better than, or less good than the Man and Animals films that you saw?

Mike: I think they're as good as...

Interviewer: Did you hear any tapes at all?

Mike: Yeah...we had records, but I don't think we had any tapes.

Interviewer: What were the records?

Mike: Umm . . . it was telling about . . . it was telling stories that . . . on the record, it had Eskimos telling stories, and at the end it had a couple of children singing songs, and they were telling what had happened to them and what happened when they had a baby, and what happened when they went fishing for a caribou, and things like that.

Interviewer: Did you like the record?

Mike: Yes.

Interviewer: Do you find the reading hard or difficult?

Mike: No.

Interviewer: And you like reading the stories?

Mike: Yeah.

Interviewer: Do you bring them home, or do you read them in class?

Mike: I mainly read 'em in class, except on a couple of articles . . . which sometimes I may bring home.

Interviewer: You did an exercise on some family diary . . . what was that all about?

Mike: It was supposed to make a symbol for every member in the family, but, you know . . . like, the girls would have something in common, or the boys would have something in common, or people who were right-handed and left-handed would have something in common, or there would be just symbols for what people in the family were.

Interviewer: Is there any general way that you could make one up and I would understand it, and somebody else could make one up and we could both understand it? Or you wouldn't have to explain it each time, or...

Mike: I don't know . . . it'd be pretty hard.

Interviewer: Do you feel as though you're repeating what you learned before?

Mike: Well, at the very first one we started and were repeating a little bit. But now we're not repeating anything, we're learning a lot now...

Commentary

In Mike's fourth interview, his recall of film material is astonishing. When asked what information was included in "Fishing at the Stone Weir," he gives accurate and detailed accounts of the Eskimos' way of fishing. Few ethnographic accounts would be more clear or specific. In other words, the model given in the film became translatdd into an enduring visual image that he could convey verbally.

Mike is also honest in his appraisal of Netsilik customs:

> ...their customs seem pretty funny around here, but you know, they make sense for their environment.

It is interesting in this interview to note how Mike is able to reflect on an answer to a question and evaluate its relevance. He speaks of the example of the birth tent as a Netsilik response to the environment and then decides,"But that doesn't have anything to do with the environment." This shows him in the process of receiving his own thoughts and illustrates the reflective nature of the interviews.

December 5, 1967

Interview with Kenny

Kenny: Well, we're studying what makes man human. And we're trying to compare the animals to the human being.

Interviewer: What have you found so far?

Kenny: Well, the salmon babies have no dependency to their parents, because they die right after they lay the eggs. And the humans are the most pampered animals. They have on to 22 years of dependency.

Interviewer: What do you mean by dependency? What happens to them?

Kenny: Well, like our dependency . . . the parents get food for us, and they buy clothing and support us through school, and pick out stuff, and things like that.

Interviewer: So, did you enjoy the movie?

Kenny: Yes.

Interviewer: Did you like that better than the booklets?

Kenny: It was hard to say, because the salmon booklets, you're comparing everything with it, and a few other animals, too. And they put a lot of information into it, and they're doing it very succinctly. And in the film they were doing it longer. And they put in a lot of information. There's two different techniques.

Interviewer: So, you like each of them for what they are?

Kenny: Yes.

Interviewer: You saw the slides on the herring gull?

Kenny: Well, I've seen herring gulls before, because I've been down to the beach. And they come down. I've never seen them real close. And I never imagined how pretty they are. They are very pretty. And if you look closely at the structure, you can see how they're built to fly. And to dive.

Interviewer: What is their structure like?

Kenny: It's the bird-like structure. It's streamlined. The wings are outstretched, tilting down and sort of slanting backward, with a lot of feathers. Like any bird. And when it dives down to get fish, it has this oily substance on their feathers that repel the water, because if they didn't have this, and then dove, they'd just sink.

Interviewer: Any other ways, besides dependency, that man is different from the animals?

Kenny: Well, man lives longer, and man is much smarter. Man has a bigger brain. Like a horse. A horse has a bigger brain than its size, but man has a greater ability to learn than any other animal.

Interviewer: Why is that?

Kenny: Because man is unique. And he has different senses, and he can think, unlike many other animals. In the theory of evolution, they say man is descended from the apes. The apes are the second smartest, or maybe the dolphin. But it's said we're the end of the line, so we have to be . . . we must be the smartest.

Interviewer: What makes somebody smart, do you think?

Kenny: Well, we have a section in our brains for learning. And you could say we have different things for senses, and movements, and relaying messages. But the biggest space in our brain's for learning. And the other animals have a very small space for learning.

Interviewer: Can you point to the learning space, where it is?

Kenny: Well, no, but we have different sections, and we're studying about the human brain, too. And we got a diagram and we divide up into sections. And we divide it A, B, C, D and E. A to do with your arms, your legs, your back, and everything like that. And B is the sensitive area. The senses like touch. C could be vision and hearing, and thinking. I think that's D. But that's a big part for thinking. That's the biggest part.

Commentary

Early in his study of MACOS, this boy shows right off how he is relating the material in the course to his own perceptions and experiences outside the classroom. The herring gull visuals, for example, bring him a new sense of the bird's beauty and structure:

> I've seen herring gulls before...I never imagined how pretty they are...you can see how they're built to fly...

On the whole, his first interview shows a building up of detail and knowledge about specific animals and human differences or similarities. There is a straightforward, interested, detailed quality to these early comments, a boy-like curiosity and storing of information.

It is worth noting that his only linking of personal reactions to learning inputs comes from the visual materials, where he gives an emotional, aesthetic response as well as a content-centered reply to questions.

[illegible]
January 5, 1968

Interview with Kenny

Interviewer: What do you remember about the herring gull?

Kenny: Well, it is a fish-eating bird, and its structure helps it survive, because when it is preening it sticks its beak into this oil gland in the back, and from this oil gland comes this oil substance which he puts all over his feathers, and this makes him repel water.

Interviewer: So, this is sort of how his structure helps it survive?

Kenny: Yes.

Interviewer: What does preening mean?

Kenny: Well, he cleaned off his feathers.

Interviewer: Why is it that some herring gull chicks survive and others don't?

Kenny: Some, when they get big, forget to crouch down, and sometimes their parents forget to feed them so they die of starvation.

Interviewer: Is there a way that a parent knows its own chicks?

Kenny: Sort of. The chicks really know the parents better than the parents know, their own chicks. They peck at them so much (the chicks at the parents) - they peck at the red spot so much that they can tell the difference. They can recognize a few things. They have fairly good vision, so they can tell.

Interviewer: Do you think that if a strange chick got into the nest, the mother would feed him?

Kenny: I don't think so - because they have a little different smell, and they look a little differently.

Interviewer: Does the herring gull learn very much?

Kenny: Well, it doesn't have very much learning space in its brain. It can, a little, but mostly it is instinct which he reacts with.

Interviewer: What is an example of instinct?

Kenny: Well, some people think that a herring gull picks up a clam and drops it on a rock to . . . and then gets to eat it, but that is not really true, because sometimes he can drop it about a hundred times and not hit a rock and just drop it on the sand. That's an instinct, just to drop it. And preening is another instinct. And the chicks are born with an instinct to peck at the red spot - we don't know why but they just do it -- the parents don't teach them to do it.

Interviewer: Well, what are some things that you think that they learn?

Kenny: They learn their territory and to keep out of other people's territory, because if they do, they can get into a fight.

Interviewer: How do they learn that?

Kenny: Very easily. They catch certain boundaries, and they nest all around the territory, and the chicks are taught by their parents where the territory is and not to wander off from the territory.

Interviewer: How do they teach them -- do they say "Now, Johnny, don't go here"?

Kenny: Well, I think by experience, because they get chased out or something like that.

Interviewer: Can you give me an example?

Kenny: If you took the anatomy of the whale and looked at his bone structure, he has places where there used to be legs and arms, and I have a theory about this which may seem stupid, but I've been thinking that if all the whales went back to the land, they would be what we know as the dinosaurs.

Interviewer: Really? Can you explain more about that to me?

Kenny: Well, the whales are the biggest mammals . . . the biggest animals that we have, so I think that they must have gotten smaller, and they were bigger when they had the extra limbs.

Commentary

A noticeable attribute of this interview is the colorful language Kenny uses in his examples to convey ideas about the herring gull. There is a narrative quality to his telling about the herring gull; he recounts what he has learned as a story.

The interest of this age group in learning about animals is apparent in Kenny's interview. He closes with his own theory about whales as the survivors of the dinosaur era.

March 13, 1968

Interview with Kenny

Interviewer: All right. Well, here, I guess, are all the baboon booklets. Tell me, you know, what you liked, what you didn't like.

Kenny: Well, I liked this one, The Baboon Troop.

Interviewer: You did?

Kenny: I liked the way it showed the different...the amount of the kind of baboons in each troop, and the dominance, and things like that. I liked most of the books on the baboon troop. The two of them.

Interviewer: What? The Range, or just The Troop?

Kenny: I really...I liked all of them. They were...They gave good information.

Interviewer: Do you like what it talked about, or how it talked about it? Do you know what I mean?

Kenny: Well, really both. And it's...I liked the information mostly. The style isn't really Edgar Allen Poe-ish, but it's kind of nice.

Interviewer: Would you like it to be Edgar Allen Poe-ish?

Kenny: No, I wouldn't.

Interviewer: Okay, how about these booklets here? These are a different type.

Kenny: Well, I especially liked this one.

Interviewer: The Animal Adaptation?

Kenny: Yeah. Because I liked the information, and I liked the pictures in it.

Interviewer: The cartoon type?

Kenny: Yeah. Some of these things, like this and like this, I liked. Because of the animation.

Interviewer: Can you tell me something about the content of that book?

Kenny: Well, it says what different functions...the functions of the bodies are. Like the mosquito. Everybody thinks mosquitoes are terrible creatures...they bite you, they're terrible, they're horrible. And that's really not true because just the mosquito bites to get blood for the eggs. But then he can...it would be good if they didn't have the eggs.

Interviewer: So there wouldn't be any mosquitoes at all?

Kenny: Right.

Interviewer: Okay, how about this Information and Behavior booklet?

Kenny: Well, I don't remember that one...Oh, yeah, this one. Well, I liked it, except it was a little confusing on the three different sizes of the paper.

Interviewer: And so, if it were...each of the pages were full length?

Kenny: Yeah, like the other ones.

Interviewer: Okay. And how about this one, Innate and Learned Behavior?

Kenny: I don't think we took that one. I don't think so. No, we didn't.

Interviewer: Would you like to have it?

Kenny: Well, I guess so. Looks sort of like...a little like the Animal Adaptation. It's written sort of in the same thing.

Interviewer: How about these Structure and Function booklets?

Kenny: Oh, yeah, I liked this, because it had the practicality of the different structures, and it says, like in the first place, if your hands were disk-shaped, you couldn't............

Commentary

As Kenny notes in this third interview: "I liked the information mostly." He mentions the straightforward informational quality of the materials in the first section of the course: "The style isn't really Edgar Allen Poeish, but it's kind of nice."

While he appreciates some of the more whimsical illustrations in the booklet on animal adaptation, he is somewhat put off by the introduction of different-sized pages in another booklet.

Again, we recognize the steady accumulation of information as a main component of his experience as the course progresses.

May 6, 1968

Interview with Kenny

Interviewer: Have you ever studied Eskimos before?

Kenny: Yes, in third grade.

Interviewer: Do you remember anything about them?

Kenny: Well, we didn't study any specific tribe. We studied Eskimos in general. I remember the different animals, and the igloos that they built, and the different types of shelters that they had, and the clothing that they wore.

Interviewer: What were some of the different animals?

Kenny: The caribou, seal, walrus, muskox, and occasionally a whale.

Interviewer: Do you remember about their way of life and their ideas, and things like that?

Kenny: Well, they were superstitious.

Interviewer: Do you remember that from before?

Kenny: Yes, because they had these pictures, and they showed the Eskimos.

Interviewer: When you heard that you were going to study the Eskimo, how did you feel about that?

Kenny: Well, I was kind of glad, because I had a little basic knowledge of it, and I hadn't had anything on the salmon or the seagull or the baboon.

Interviewer: So you wanted to do something with them?

Kenny: Yeah.

Interviewer: What do you think of what you've been doing so far?

Kenny: It's pretty good. It's gone into more ideas than just basic things. They're showing details of the ideas, and when I studied it before I just had facts, I didn't have that much ideas.

Interviewer: What kind of ideas?

Kenny: Well, the men, their philosophy of life.

Interviewer: What do you think of their way of life and their ideas?

Kenny: They're very primitive. And as far as I know, very slow in getting modernized.

Interviewer: Do you think we should go in and tell them what's what, and that they're very superstitious and silly?

Kenny: Not really, because they might think that our religion is very stupid.

Interviewer: What do you think about their way of life?

Kenny: Well, it's very interesting. It has a sort of everyday superstition with everything they do. Like they have taboos on seal hunting, and fishing, and things like that.

Interviewer: You've seen some films. What did you think of those?

Kenny: Well, I liked them a lot, but I didn't, well one of the films I liked a lot, and another one I didn't like that much. The one crossing the Tundra, I didn't like that one, because they just showed them walking across and things like that. The other film, they set up a tent and went fishing. And I think it was much nicer. And the one with the caribou was good.

Interviewer: How do you like these films compared with the ones in Man and Animals?

Kenny: Well, the one about fishing was probably as good as the salmon films. It had a lot of content of action, and it showed more than some of the other films.

Interviewer: What about the records telling the stories, did you hear much of that?

Kenny: No, we heard some of it, but I think that they're good stories. I liked them. I enjoyed them, and they might...I personally think that they're kind of primitive type things. Things like that, but I like them, and they might think that our stories are so crazy, so that I really have no say in it.

Interviewer: What do you mean about primitive? You've used that a couple of times?

Kenny: Old-fashioned, sort of. Not up to our development. Or what we call civilization.

Interviewer: Well, like what things?

Kenny: Well, they don't go around riding cars or snowmobiles. And they don't have submachine guns. They're still in the old-fashioned place of the ancestors. I think that here in the United States we've got a lot of machines. We use many things. We use electric heaters, gas heaters, but there they have different houses, different heating systems, almost everything is different.

Interviewer: Does that make them primitive?

Kenny: Sort of.

Interviewer: Does being different make them primitive?

Kenny: No, but being old-fashioned. They don't have all these inventions that we do.

Interviewer: Do you think that if they had our inventions, that would be a good thing?

Kenny: Not really, they'd have to know how to use it.

Interviewer: Well, if they did know how to use them?

Kenny: Well, yes, it would be. If the machine like a snowmobile. They couldn't use something like a car up there. But snowmobile machines would help them.

Interviewer: What about their ideas? Do you think their ideas are primitive?

Kenny: Yes and no. Some of them are, and some of them aren't. The ideas of life, I mean the way they just go along and they share everything, I think that's excellent, and I wish the rest of the world could do that. And things like their folklore and things like that are amusing, but sort of kind of primitive, and also spiritual.

Interviewer: You did a diagram on families?

Kenny: No.

Interviewer: Making a family tree?

Kenny: I think so.

Interviewer: Do you remember anything about that?

Kenny: A diagram of your father and your mother, like with a line? Yeah, that was, well, it showed different relations and it showed how you came to be. And I think that was really all. I think really the main thing it showed is different relations.

Interviewer: Is there any way that you could draw a diagram and you could be sure that I would understand it?

Kenny: Yes.

Interviewer: How's that?

Kenny: Well, I might be... I have five people in my family, and it goes like this, down like that, and I put a squiggly thing and a square. And then in the middle of this line, I take a line going down, and I make a thing just like up there, except it's going down. And I put three little squiggly things.

Interviewer: How do I know what the squiggly things are?

Kenny: Well, I'll tell you something, that there's only one girl in my family and the rest are boys, and then you can figure that out, because the squiggly things would have to be the men and the square would have to be my mother.

Interviewer: Anything else you want to say about the Netsilik stuff you've been studying?

Kenny: No, I don't think so.

Commentary

A greater range of reflective thinking is elicited from Kenny by the Netsilik materials. One of the criticisms aimed at the Netsilik unit is that it leaves children with the view that the Eskimo is "primitive." Considering this child's thoughts after about half the unit, we can explore his use of the word "primitive." It is apparent that he is not using this word in a facile, derogatory way, but is subsuming under it a thoughtful, and in many ways accurate, interpretation of their life style. He sees "a sort of everyday superstition" in their use of taboos that pertains to their survival needs, and he stresses that he means "old-fashioned" when he uses the word primitive: "They're still in the old-fashioned place of the ancestors." It seems that he is getting at the unchanging quality of their lives, compared with our constantly inventive civilization.

The astuteness of children as to the purposes of class materials is evident in Kenny's remarks about the Netsilik unit:

> It's gone into more ideas than just basic things. They're showing details of the ideas, and when I studied it before, I just had facts, I didn't have that much ideas.

The national checklist sample results showed that the overwhelming majority of children selected as the most important aspects of the unit learning about the way Eskimos work and their feelings, dreams, and religion. We find many illustrations in the interviews of this preference for learning about life-style. Beliefs, religion, and ways of interpreting the meaning of life hold a special fascination for youngsters. When Kenny is asked what the ideas are to which he is referring above, he says, "Well, the men, their philosophy of life."

He is also reflective about the characteristics of Eskimo religious practices and senses their attentiveness to the capricious aspects of their lives -- the variability of the food supply, the vagaries of the hunt, the whims of wind and snow as they determine daily existence. With regard to the sun -- the power that children know is worshipped in some areas of the world as the ultimate and life-giving source -- Kenny has decided that the Netsilik take it:

> ...for granted, and they don't have to worship it... it keeps coming back...they worship the bad gods, but they don't worship the good.

December 5, 1967

Interview with Bruce

Interviewer: What about the salmon?

Bruce: Well, salmon, there isn't much more to talk about.

Interviewer: What do you mean?

Bruce: They covered everything about the salmon. That was okay, because the booklets were at least longer. They told more.

Interviewer: How about the film? What did you think of the film of the salmon?

Bruce: Oh that? It was great. It was rather chopped up. It was an old film, and if they could get it they should have it. I don't know if they could, but they should make another film of it, or fix the film, because it wasn't very clear, especially the sound.

Interviewer: The sound wasn't clear?

Bruce: It wasn't even with the pictures.

Interviewer: Is that what you meant by being chopped up?

Bruce: Well, the sound...if you've ever seen a film where the sound jiggles? And the sound track is scraped or cut into. How old is that film, anyway?

Interviewer: I have no idea.

Bruce: Cause it's not in the best condition.

Interviewer: Was this the one in color, where he was fighting to go upstream?

Bruce: Yeah, and he became king of the river. I like the slides. Do they have another set of slides coming?

Interviewer: Slides on which ones?

Bruce: The herring gull.

Interviewer: I have seen some slides on the herring gull. Then they had some other slides which are more general about all types of animals. Do you like the slides better than the film, though?

Bruce: Uh-huh. I don't know, because I haven't seen the film on the herring gull. So I don't know about the film, though. The slides were excellent.

Interviewer: Would you like the reading to be a little harder?

Bruce: Yeah.

Interviewer: How would you make it harder?

Bruce: Well, the booklets, the one of the herring gull, they weren't too long. And I'd rather have more information in the booklet. If they're going to have to pack the thing, they might as well not have those booklets, because they're not very long. They tell some, but they could tell more.

Interviewer: What kind of things would you like them to tell more about?

Bruce: How it makes out in the territory or what it does. Things like that. How they make their nests... It didn't tell anything about that. It didn't tell anything about the nest at all. I think it was...the second book in that little packet on herring gulls. You know that cardboard cover with the books inside? The slides showed three eggs in the nest, and the book said out of the six or seven eggs, only one survived. They only had three eggs, so I was wondering whether they reproduce two times in one summer. Because they only showed three eggs in the film, and out of six or seven, only one survived.

Interviewer: Did you find out your answer?

Bruce: Not yet.

Commentary

The interview with Bruce begins at the analytic level which we come to recognize as his special style. He starts with a critical review of the visual and sound quality of the salmon film. "It was great" as material, he exclaims, and then proceeds like a professional to dissect the condition of the film which he does not consider the best.

He puts his stamp of approval on all of the slides he has seen so far and then goes on to discuss the format of the booklets:

> I'd rather have more information on the booklets...
> they could tell more.

His attention to details, and the relating of one source of information to another, is clearly demonstrated in his questions on the herring gull. He finds that the booklet gave a survival rate of one in seven, while the slides "showed three eggs in the nest...so I was wondering whether they reproduce two times in one summer."

January 5, 1968

Interview with Bruce

Interviewer: Why is it that some baby chicks survive and others die?

Bruce: It could be the parents haven't eaten for a while and the chick is out of luck -- no food. They could starve to death. Or the chick wanders to another nest and the bird doesn't recognize its chick, it'll kill it. Or if the chick just comes to its own nest and the mother doesn't recognize it, it'll kill it. And there's always predators.

Interviewer: So he's got a lot of things going against him?

Bruce: Yes.

Interviewer: How does the mother recognize the chick?

Bruce: There's a pattern of spots on the back of his neck, and she'll recognize that as one of her chicks. If she doesn't, she'll kill it.

Interviewer: Does the mother instinctively recognize the spots?

Bruce: No. Well, she has to see them for a while. And also, sometimes, because of the sounds they make. That also helps. Sometimes they don't recognize the spots.

Interviewer: Then they've had it, huh?

Bruce: Yeah.

Interviewer: Can you give me an example of the difference between innate behavior and learned behavior?

Bruce: Innate behavior is something that's built in when they're born, and they don't have to learn it. Like pecking at the red spot. That's built in. And learned is like, when the chicks they can't fight, they have to learn to fight.

Interviewer: If an animal lives in a certain environment and then the environment changes, do you think he would have to change in order to survive?

Bruce: Yeah. He'd have to change or migrate, either one.

Interviewer: Can you give me an example?

Bruce: Let's see. If there were a bird that likes hot weather, and it suddenly got cold, he's going to migrate. Because I don't think a bird that was built for hot weather is going to stay around if it's freezing cold, so he migrates. But usually the environment doesn't change that much. If an animal picks an environment, that's where he wants to live, and usually that's where he stays.

Interviewer: Does an animal pick his environment?

Bruce: No, it's where he's born. That's what the parents pick it for him.

Interviewer: Well, I'll think that one over. Which do you like best of the animals you've studied?

Bruce: The baboons.

Interviewer: Why?

Bruce: I'm more interested in primates.

Interviewer: What's a primate?

Bruce: A primate's a monkey. Well, we're primates, too. Monkeys have bigger brains than birds. Monkeys...I think that in the class of animals, monkeys rate next to us.

Interviewer: I see. Do you like to study about smart things?

Bruce: Yeah. I'm more interested in monkeys than I would be in fish or gulls or something like that.

Interviewer: You're not interested in fish? Unrelated to you, is that why?

Bruce: I don't know. It's just that it doesn't hold my interest, that's all.

Interviewer: Okay.

Bruce: Neither did the gulls.

Interviewer: What don't you like about gulls?

Bruce: I don't know. I'd rather not fuss with them. Space.

Interviewer: Space?

Bruce: That would be a little better than animals. But I don't mind.

Interviewer: What would you like to know about space?

Bruce: Well, you know, spaceships, planets, I just can't say one thing. I'd like to learn a lot about space.

Interviewer: So you would like an astronomy course, or ...?

Bruce: Yeah. But the girls wouldn't like it that much. That's the whole problem.

Interviewer: Oh, would you like to have a class just for boys in astronomy?

Bruce: Yeah.

Interviewer: Would it be all right if the girls liked astronomy, could they be in the class? No? Okay, I'm sorry for suggesting it. Okay, thanks a lot, Bruce.

Commentary

As the course continues, Bruce expresses preference among animal studies for the baboon, because "I'm more interested in primates...we're primates too." He states, however, that what he'd really like to be learning about is "Space... That would be a little better than animals." His sense of adventure and exploration is not satisfied at this point by the animal studies, and he yearns for the stars...

March 13, 1968

Interview with Bruce

Interviewer: When did you learn about the innate behavior, then? Where did you pick up your information?

Bruce: Well, the herring gull... Well, we started with the salmon, and the ability to work its way upstream to where it was born. Innate learning. Well, he was born with an urge, in other words, when he was five to go back upstream. And that was innate behavior. That was where we started. And then the gulls. Let's see, the baboon...Let's start with the gull. The gull's innate behavior was to peck the red spot, and the baboon's was that a baby would cling to his mother's chest.

Interviewer: Okay, so you learned the innate behavior while studying the animal. How about Animal Adaptation, did you read it?

Bruce: Yes.

Interviewer: What did you think about this?

Bruce: Mmm, it was a good booklet. The illustrations showed clearly what the book was trying to get across.

Interviewer: What did you think of the reading? Was it too hard, or easy?

Bruce: Well, it was rather easy. Because none of the words were too hard.

Interviewer: Would you change this booklet?

Bruce: The booklet? I don't think I'd change it. I like reading smaller print better.

Interviewer: Why?

Bruce: Just.....

Interviewer: You just do?

Bruce: It's easier to read than the smaller print, but they overdo, and I don't like the color of the words. I'd rather have them dark.

Interviewer: A darker green or a black on them?

Bruce: Yeah. I like the photographed stuff.

Interviewer: Do you like the combination of photographs and sort of cartoon or hand-drawing?

Bruce: Yeah, well, it doesn't exactly look real.

Interviewer: And how about the baboon booklets, just in general?

Bruce: Well, the baboon booklets, I thought, were the best of all booklets. I think I told you ...

Interviewer: Better than these here?

Bruce: Yes. I think I told you that once. Maybe I didn't.

Interviewer: Why?

Bruce: They interest you more, because Structure and Function and things like that ... I like them better. They told more, and they were more interesting generally, I guess.

Interviewer: You started to say that things like these books, Structure and Function and Animal Behavior and all that ... Is it the topic that doesn't quite interest you?

Bruce: Well, structure and function are ... we were talking about structure. It was a good book, the way it was put out, but I don't think it needed to be in there.

Interviewer: It wasn't relevant to ...?

Bruce: Well, the structure we could talk about without having to use this, I don't think.

Interviewer: I see. So you'd rather learn about ... just deal with all that information in the booklets about the animals themselves.

Bruce: If you could change the information booklets, and you made them into the kind of booklets that baboons were ...

Interviewer: What do you mean?

Bruce: Well, like you'd have the things like this and the drawings, more stuff written on the pages, and things like this, so that it would be like this book, only it would be about this subject.

Interviewer: I see. A little more like a book.

Bruce: Yeah.

Commentary

His third interview, as he is closing off his study of the animals, reveals a good sense of the conceptual progression of the course. He gives an example of the innate behavior of the salmon, herring gull, and baboon. Again, his critical approach to the quality of the materials is shown in his response to the question, "What did you think about the booklet, "Animal Adaptation?"

> It was a good booklet. The illustrations showed clearly what the book was trying to get across.

Bruce continues this critical perspective on the physical attributes of the materials with a comment on the printing in another booklet.

> I like reading smaller print better...(the big print) is easier to read than the smaller print, but they overdo. And I don't like the color of the words. I'd rather have them dark.

Anyone who is misguided enough to think that youngsters don't notice the differences and details in classroom materials must change his mind after listening, as we have, to the responses of many youngsters to the format and style of these materials.

Bruce then moves to a criticism of the content of the materials and states that he prefers the baboon booklets to such concept booklets as "Structure and Function," because:

> The structure we could talk about without having to use this...

He is a bright child, and he feels somewhat talked down to by such devices as large print and uncrowded pages.

May 6, 1968

Interview with Bruce

Interviewer: What have you thought about the Eskimos?

Bruce: It's one of the better studies. The material is alot better, I think, the way they set it up. They're getting some pretty cool stuff....I like it, and the other things that we've been doing...'cause this is, has more visual aid that has a lot more things, like booklets ... I like them better than the others, even better than the animals.

Interviewer: Have you studied about the Eskimo before?

Bruce: Yeah, in the third grade.

Interviewer: And what do you remember about that?

Bruce: Not much. We weren't really talking about...we didn't have the material we have now, and we weren't really talking in detail. So, we had a short study....

Interviewer: What do you remember most about what you've been doing so far?

Bruce: I'd have kept the whole journal thing out. I just don't....

Interviewer: You don't like reading his journal?

Bruce: No....I'm pretty sure it's real, but uh....it's kind of a boring journal, I think. I don't know why, it's the first book I've been reading that I've even disliked.

Interviewer: Do you think that an Eskimo family is very much like your family?

Bruce: Yeah.

Interviewer: In what way?

Bruce: They aren't any different. We have...we live easier than they do, we have more things...but otherwise the family's the same. Children sometimes play...they play some of the same things...they don't actually, because they live in a different place. Their family's the same... they're human beings and it should be the same. So...it is.

Interviewer: Anything else you want to say?

Bruce: Well, it's been one of the best studies so far. I'd seen all of these books and what we've used has been booklets and the journal and the animal booklet...and building an igloo (that was just a page), and another thing...the cards, and I made up a game with those cards.

Interviewer: Do you think that Eskimo family is very much like your family?

Bruce: Yeah.

Interviewer: In what way?

Bruce: They aren't any different. We have...we live easier than they do, we have more things...but otherwise the family's the same. Children sometimes play...they play some of the same things... they don't actually, because they live in a different place. Their family's the same...they're human beings, and it should be the same. So...it is.

Interviewer: Anything else you want to say?

Bruce: Well, it's been one of the best studies do far. I'd seen all of these books, and what we've used has been booklets and the journal and the animal booklet... and building an igloo (that was just a page), and another thing...the cards. I made up a game with those cards.

Commentary

As he moves into the study of the Netsilik, Bruce continues in his "materials" approach to evaluating the course:

> The material is a lot better, I think, the way they set it up. They're getting some pretty cool stuff...this has more visual aid...a lot more things, like booklets.

He reviews his third grade study of the Eskimos in thoughtful fashion:

> We weren't really talking in detail, so we had a short study...

He dislikes the Rasmussen journal, a common reaction to that set of readings, and enjoys the categorizing exercises that accompany the use of the "Arctic and Arctic Animals" booklet.

June 4, 1968

Interview with Bruce

Interviewer: What have you thought about the Eskimos?

Bruce: It's one of the better studies. The material is a lot better, I think, the way they set it up. They're getting some pretty cool stuff... I like it and the other things that we've been doing...cause this has more visual aid that has a lot more things, like booklets... I like them better than the others, even better than the animals.

Interviewer: Did you prefer one movie to another?

Bruce: That first movie, "Fishing at the Stone Weir," I liked that one better than the other one.

Interviewer: Have you studied about the Eskimo before?

Bruce: Yeah. In the third grade.

Interviewer: And what do you remember about that?

Bruce: Not much. We weren't really talking about...we didn't have the material we have now, and we weren't really talking in detail. So, we had a short study. I'd have kept the whole journal thing out. I just don't....

Interviewer: You don't like reading his journal?

Bruce: No...I'm pretty sure it's real, but it's kind of a boring journal, I think. I don't know why, it's the first book I've been reading that I've even disliked.

Interviewer: How about the book on the Arctic?

Bruce: That was good...it was great. She had the animals, the adaptation, and we had to classify what it had on the sheet. The mammal, herbivore or carnivore, whichever one it was. We put that down and the member of what family and when we got another about adaptation: claws, teeth, eyes...

Interviewer: What have you enjoyed most of the reading?

Bruce: On Firm Ice. It's a lot better than that Journal.

Interviewer: You mean you like it best because it's better?

Bruce: I just liked it. I liked the stories. It's the only book we read them in.

Interviewer: What did you think about the pictures?

Bruce: I think they're great.

Interviewer: How about the pictures in the other books? Do you like them as well?

Bruce: Yes, they're all done well. These, I think, are sketched the same way.

Interviewer: For Journey?

Bruce: Yeah, they were sketched the same way.

Interviewer: What did you do with the play?

Bruce: We read through it, we had different people do the parts.

Interviewer: What did you think of it?

Bruce: It was O.K.

Interviewer: Did you act it out at all?

Bruce: No.

Interviewer: Would you have liked to?

Bruce: I don't know.

Interviewer: Of the films that you saw, are there any that made you particularly admire the Eskimo?

Bruce: No. We haven't seen many films about the Eskimos. We saw the one about crossing the tundra, and that one about building a tent, and I said that they had had one about their crossing in the wintertime, but I don't think -- do you think they could get one like that, maybe?

Interviewer: Yeah.

Bruce: Or building an igloo? Or some of it?

Interviewer: You'd like to see that?

Bruce: Yeah. Of course, it's harder to photograph up there in the winter. It's a lot colder then. So you'd really get an idea of what it's like.

Interviewer: There hasn't been anyone to film what it's like. It's a very good point. If you were an Eskimo, would you rather be a man or a woman?

Bruce: I'd rather be a man.

Interviewer: Why?

Bruce: I just would.

Interviewer: What do you think about killing the babies?

Bruce: I think they have to. I can see why they should, because a baby isn't really old enough to know anything, actually. Some people didn't like the part when they were eating the caribou, you know, the film, when they were in the kayaks. They could take some of the things, but eating the eye, that really got to them.

Interviewer: Did it bother you?

Bruce: Not really very much. It was a little bit worse than the fish eye. The fish eye he'd just pop in his mouth, but I get so giddy...

Interviewer: The caribou eye. Did he chew it?

Bruce: Yeah, he chewed it. The caribou eye he had to take a bite out of, that really got ya. The films didn't tell you very much, they tell a lot, but ...

Interviewer: You want more information.

Bruce: Yeah. Like the one where they were crossing the tundra, now that I feel that I don't know why they even bothered to put out. They sat there for about ten minutes and walked. Did you see that one?

Interviewer: No, I didn't

Bruce: They just walked, and then...

Interviewer: There was no narration telling what they were doing?

Bruce: None of them do. They don't have any narration.

Interviewer: Do you think that would help?

Bruce: Well, that would give more information, yeah. But they didn't have any narration.

Interviewer: Does the Eskimo life seem routine to you, or do you think they do different things?

Bruce: Oh, it's not routine; you go out hunting; one day you might catch something; maybe the next day you won't catch anything at all, and maybe you go out, and you're not feeling too well, and then you catch two seals by yourself when the whole camp has been starving. So it's not routine, actually.

Interviewer: What do you think the Eskimo really cares about?

Bruce: Oh, he cared about food, spirits. In On Firm Ice, this story, right here, that told a lot about the spirits, but this little girl who had a leak in her boot, and she went in and sewed it up, during seal hunting. Well, the women aren't supposed to do any sewing, and just then the camp started going into starvation, and nobody had any meat, and she couldn't stop leaking, she couldn't; you see, nobody was in the igloo at that time, and so she'd even forgotten that she'd sewed it up. And so he found out, and, well, first of all they held this thing in the great igloo, and everybody was silent, and next morning, let's see, the grandmother told her a story about this witch, who, ah, ate children, and, ah, the children were playing, and the witch saw them, and she grabbed the fattest boy, and he had a hole in his boot, and he stuck his toe out, and he started wiggling it at her and she said, "What's that?" and he said, "The toe witch," and she said, "I've never seen one of those before," and she said, "What does it eat?" And he said, "Old woman witches," And then he ran. And she remembered about the boot.

Interviewer: You liked that story?

Bruce: Yeah. Then they found out and they brought in some seals and they brought in two a night, and a whole bunch in a day.

Interviewer: Here are some words. Please pick the two most important for the Eskimo life.

Bruce: Two?

Interviewer: Two

Bruce: Beliefs and family.

Interviewer: Why those two?

Bruce: I chose beliefs because they do watch out very constantly for what they're doing, and what they believe in, and family. I know why I picked it but I can't explain it.

Interviewer: What were your feelings?

Bruce: They try to protect people in their family, and they really... and there's a great deal of love involved and they really like the family. They like the group, and they sort of make a family if you know what I mean. Not just from one family, but from people in the camp.

Interviewer: They're part of the family, sort of?

Bruce: They're a big family. And it's important to stay together, so they can share some of the protection they need, and something to eat. So the family is important.

Interviewer: Do you have general comments? Did you enjoy the study? Better or less than the others?

Bruce: Oh, I like it better. Because I changed my mind, like; before I said I didn't like it, but, and that was when I wrote the journal, and it seemed boring, but I don't know why. It seems better now, the second half, going through this other book.

Interviewer: On Firm Ice?

Bruce: Yeah.

Interviewer: Thanks.

Commentary

By his final interview, Bruce is an enthusiast of the Netsilik unit. He has not yet seen all of the films. As he continues his critical commentary on materials, he suggests films he would like to see. Interestingly, those actually do exist in the later sequence of the course.

When Bruce is faced with an emotionally loaded question, he seems to back away from it. When asked about infanticide, he gives a hasty reply and goes on quickly to the topic of eating habits, as if triggered to speak of distasteful episodes, but on a less disturbing topic. He does give an extremely vivid and open description of his response to some of the film sequences:

> The fish eye, he'd just pop in his mouth, but I get so giddy...he chewed it. The caribou eye he had to take a bite out of, that really got ya.

The interviewer does not go back to probe about the infanticide material, so we are left to speculate about Bruce's deeper responses to the question.

His version of the story about the girl sewing during a taboo period in the booklet "On Firm Ice," while somewhat hard to follow in parts, is replete with dialogue and detail; Bruce, just as other youngsters, gives back stories of the Netsilik in great detail and with obvious zest.

He shows considerable understanding of the Netsilik way of life as he replies to the question asking for a choice of the two most important words. Beliefs and family are his choices.

The paragraph in which he discusses these two words is especially noteworthy in helping us to understand how to elicit responses from youngsters to questions of deep importance. He hesitates to explain why he selected the word "family": "I know why I picked it, but I can't explain it." Here, with a sensitive interviewer, the issue is not dropped. The interviewer probes gently with the question, "What were your feelings?" and is given in reply a most impressive response:

> They try to protect people in their family...there's a good deal of love involved...They like the group, and they sort of make a family, if you know what I mean, not just from one family, but from people in the camp... They're a big family. And it's important to stay together, so they can share some of the protection they need, and something to eat. So the family is important.

His thoughts are so rich and so complex that he finds them difficult to articulate. When asked for his "feelings," he is able to present them in a moving statement. The meanings in human interaction and responsiveness move this child most in the entire course sequence. For Bruce, there has been a growing understanding of human qualities. The films and the booklets seemed to make the greatest impression on him -- he doesn't talk as frequently as other children about the impact of the group, discussion, talking, etc. He seems to see a lot and to absorb a lot through the materials. He shows more of the "loner" style, makes very acute critical comments about each booklet and film, has strong likes and dislikes and reasons for them.

It is impressive to watch him move, over time and through the interviews, building a sense of the structure of animal and human life based upon some fundamental conceptual models such as care of young, family or group protection, adaptation, and innate versus learned behaviors.

Follow-Up Interviews

We were able to do a follow-up interview with these youngsters in March of their sixth grade year. What do they remember as they look back over the course?

Considering the children individually, beginning with Mike, we find he prefers the Eskimo unit in retrospect, for reasons that we must respect in youngsters' thinking: concern over human behavior.

> Well, the Eskimo was dealing with real men, and I guess I just like studying about men - about man, actually.

Categorical attributes of animals are still strong in his memory. For instance:

> I remember that (baboons) used to travel in herds, and that certain baboons would have dominance over the others, and that there were different age groups, like infants, juveniles, and the adults.

He also synthesized the information into some general summaries of the differences between man and other animals:

> (Man) can recall things, and remember things, and think in a split-second, and make decisions, whereas other animals can't make decisions like man can.

The distinctness of man among animal species remains clearly with this youngster; in fact, he feels it is hard actually to compare man with other animals, because "they're a whole different thing." But man, he feels, "will always be man, so you can always compare different civilizations with each other." He selects both important and relevant attributes from Netsilik life to compare against American society:

> They're sort of like us, because they have a society and they group together, and they stay with their families and they have a relationship to each other.

Mike prefers this year's social studies to last year's, however, finding it even more active and interactive -- projects, discussions, etc. He remembers his previous experience as a great deal of reading, particularly in the Man and Other Animals unit:

> It's easier (now) because everyone gets to give their opinion, and I like to hear opinion.... (last year) you had to believe what you read, instead of, you know, being able to tell the teacher that you didn't think that was really true.

Mike is the only student of this group who recalls the "givens" of the course as a constraint to opinion-forming. He feels the booklets left no room for divergent opinions about the information in them. This is essentially a true perception. The consistency of information presented can be viewed as an element suggesting conformity of knowledge: inquiry begins from the givens of the course; children are not encouraged to doubt the quality of the basic source material.

A second boy, Kenny, remembers first of all "seeing a lot of films" and recalls the booklets on the Netsilik, mentioning the pleasure he found in them "because they had stories, like 'Kaluarsuk' -- yeah, that's his name." He found these materials more imaginative than the animal booklets, and spoke of the latter as being much more repetitive of what he had seen in the films: an astute observation, and accounting in part, we believe, for the better "showing" for the animal unit than for the Netsilik unit on objective tests. Kenny also sees clearly several attributes that distinguish man from other animals:

> He could provide for himself and adapt himself to almost every climate and situation... He could think. He used tools, which was an advantage, and... he hunted every animal, rather than every animal hunting him....

His regard for the Netsilik belief system is typical of this group of bright suburban youngsters; he accepts what he terms their "superstitions" as:

> ...logical. The Greeks probably had this same sort of system...I believe in monotheism... and they seem a little strange to me, but I can accept it, because people worship in different ways.

Kenny does mention that "I don't remember (the unit) that clearly." He notes, however, the social structure of Netsilik life almost a year later, and relates it to the economic necessities imposed by the environment:

> They seem to be very close-knit people, and dependent on each other, and they seem to be more food-getters instead of food-producers... everybody provided for each other....

Details will always be forgotten, as we know. What remains with this boy is an impressive set of general categories.

Kenny goes on to astonish us with his awareness of the educational materials he uses in school:

> Last year we had many little booklets... and a program that was specified... I think last year the material was better organized... Instead, like this year, one book can say "They did" and another book could say "They didn't" and you get a little mixed up.

Unlike Mike, Kenny saw the conflicting evidence in different textbooks as a source of productive tension, leading to interesting discussion. Both boys, however, recognized the consistency of the MACOS materials. For Kenny, this consistency had great appeal:

> I think the EDC program last year was a lot easier for me than the program we're following this year, and how we're learning. I don't know why -- we didn't do that much written work... but it was much more fun to learn than this year. This year, it was more like work.

As the following comment illustrates, it was also the manner of classroom management that appealed to this boy:

> We worked more in a group. We had different groups that we worked together in, and we had working groups more than we do this year. This year we're more individual than we were last year.

This statement further documents the power of group-oriented techniques to stimulate and motivate youngsters of all ability levels. Children's repeated references to the importance of the socially interactive mode in the classroom raise many questions about methods of instruction, particularly the more isolated work pattern of programmed instruction, and challenge the prevailing idea that less able youngsters might prefer programmed instruction precisely for its less socially involved qualities. Once youngsters taste the pleasures of working in groups, they want more of this mode of learning.

A third boy, Bruce, illustrates the range of materials that draw out the interest of youngsters:

> The film where they were building their igloo was interesting. They showed a lot of customs that we read in the book, On Firm Ice... They showed how they lived, mainly.

Bruce is the only one of the six youngsters to mention a carry-over of methods or ways of thinking and organizing material. This, of course, is not surprising -- children adapt quickly to the style of their present teacher; also, the mention of methodology would be a fairly high-order abstraction of course impact. Bruce does, however, utilize the methods he absorbed in the course for his own pleasure in observing local birds and small animals, illustrating in his comments that he did learn this method directly from the baboon unit:

Interviewer: If you were to study about the squirrel or a robin now, how would you go about it?

Bruce: Blind. Then a tent ought to be in the bushes, or places where they couldn't see me. But I am trying to get close to the birds and the squirrels around. I always do this. Usually I walk slowly, and I sit there. And every day I do this, and pretty soon, the birds or squirrels don't think that there's anything wrong with me. I'm not going to hurt them. And they aren't as scared. That's all I'm doing now, but if I really were going to study it, I guess I'd want to get in a blind, but animals could detect me there anyway, but you see, if I'm sitting still and I'm not doing anything they won't really mind.

Interviewer: Um-hm. They just got to get used to your being there.

Bruce: Yeah. That's what they did with the baboons, too. They sat, and the baboons got used to them.

Interviewer: Would you use any other kind of resources, or would you just sit there and observe? And what would you be looking for?

Bruce: I'd be looking for things they did. I'd pick out one bird, I'd watch it, and see where it flew, and then I'd keep the same pattern, and if it did the same pattern, I'd find out why, or try to anyway, and find its nest, if I could, and I'd watch that, and you can get a lot of things from it.

Interviewer: Would a scientist do it any differently from the way you're thinking of doing it?

Bruce: Well, not too much differently, considering he would have better tools to do it with, and he'd have more knowledge of the field anyway, on what to do and how to -- I guess he'd go about it pretty much the same way. Depends on what kind of animal you're studying. If you're studying a whale sitting on land....

Another insight into material that contributes to successful teaching (or facilitates independent learning) comes when Bruce speaks of the difference between the Rasmussen journal and the animal booklets, the former strongly disliked by him, and the latter a favorite reading.

Rasmussen he found as a "lot of talking," meaning lengthy adult commentary of a detailed, didactic nature, whereas the little booklets seemed like:

> ... you have knowledge, actually, knowledge where you want to find it... anytime you have a question about something, you know where to go to get it.

Again, consistency of presentation and organization of information are important characteristics of the course for this youth and many others, who noted similar things. Mike's reaction was rare, but illustrative of small numbers of students who were not as pleased with the course style as were the majority.

The group interview is with particularly interesting youngsters -- Kathy, Ellie and Joey -- who love debate, discussion of opinion, and who are full of ideas about the materials. They had arrived, as the reader may recall, at a global view of the course by their final interview a year earlier. When asked in this follow-up what came to mind about man and other animals, Ellie replies:

> ... that big sign that says, "What makes man human?

And Kathy adds:

> The way he reacts to certain problems, and the way he communicates and the way he is... the way he questions. And what makes him, you know, the way he is. Two animals are not always the same; I mean, they're somewhat the same, but two people are never the same.

They find the MACOS experience helpful in their current social studies (archeology and pre-historic man) "because it helps to know what makes a man first."

The group displays much of the same give and take, building on and correcting each other's comments, that they showed in their earlier interviews. Joey reveals some confusion about innate behavior, arguing that animals reason and hold conversations with themselves about the appropriate behavior in a given circumstance. Kathy counters with a more correct interpretation, and the conversation continues beyond the extract given below to somewhat of a draw between the two, with Joey beginning to modify his views:

Interviewer: Do animals reason, too?

Joey: Animals do. They have to reason... Instincts are reasoning...

Kathy: Instinct aren't reasoning. They're put into you by....

Joey: Well, now, say if a baby cub, and he smells an enemy, and he knows, it's a natural instinct that this thing is an enemy, he'll run, and that's reasoning, because if he stays, he knows he's going to get hurt, because of his instincts, so he's reasoning with himself. I mean, "You've got to leave." "No, I'm not going to leave. My foot is broken. I can't leave." "But you got to leave, 'cause you're going to get killed, 'cause your enemy is over there..." "But I can't leave, because..." He's reasoning with himself. Well, that's what everybody does.

Kathy: Like animals -- take, oh, any animal. If you take, let's say, a rabbit -- a rabbit doesn't have to use any reason, because when a rabbit sees a fox, the first thing that comes into a rabbit's mind is "Run!"

Joey: Because he has a reason to run. If he doesn't run, he's going to get eaten.

Interviewer: Is this the rabbit's idea, that he has a reason to run?

Kathy: No, it's instinct!

When they discuss the Netsilik, these youngsters clearly perceive the basic humanness of this group:

> ... we can only say things that we think about the animals, because no one's ever been an animal, but... you can ask the Netsilik things, and just because you're a human, you can feel some of the things they feel... animals can't tell you inside things.

Joey responds to Kathy's comments with a definition of the experimental method that makes it plain he understands the purpose of hypothesizing about behavior, testing hypotheses in field situations, and drawing conclusions about the behavior under study from the observed evidence.

> But you can experiment with animals, and it's sort of like asking them. It's like saying, "Can you do this?" And then you see if they can do it, and it's just like asking them....

They go on to discuss attributes of Netsilik life, comparing it to their own with such comments as: "Our source of government is central. Theirs isn't." Joey comments on Netsilik inventiveness in creating a structure in which to live:

> Whoever thought of building an igloo? Whose idea was that? You know, that's really neat. That's good architecture. Standing up by itself....

These youngsters express, as other children have, a great preference for the Netsilik stories over other readings -- "Whoever wrote the stories, that was great" -- and an enthusiasm for the pictures in the Netsilik unit. Kathy notes:

> The pictures of the animals were O. K. They gave you a feeling of the animal. But the ones that were about the spirits -- they were really modern. I thought they were great, because you had to look deeper into the picture to see anything. And also then, I began to draw some of my own pictures of that.

Kathy had mentioned her liking for Netsilik drawings in her original interviews. As seen here, she remembered this fondness a year later.

The imaginative quality of the materials gave her impetus toward personal artistic expression.

A humorous note is struck when the group is asked how a scientist would go about observing a robin:

> First, he'd get a grant or something like that, and then he'd get a whole mess of people to do it... Yeah, get a group.

Suburbia comes shining through in this comment!

Films are given their usual accolade:

> Movies were much better (than most of the reading), because you can see what you're doing. I mean, if they say, "Well, we have to approach with caution now," you can show it better.
>
> The films were great... we didn't have the last one of the set of four, you know, "Fishing at the Stone Wier." We didn't see the last one, and she said if she gets it this year, we can see it, and I look forward to that.

Joey's summary of the purpose of the course is to the point, and correct:

> What makes man man, and what makes a salmon a salmon? And that was the main question.
>
> Yeah, compare....

Their closing comments provide an insight into why so many youngsters seem to prefer the Netsilik unit to the Man and Other Animals unit:

> ... you didn't just tell about the Netsilik. With the Netsilik went all the animals that they hunted, their entire environment, the plants and everything. The Netsilik had more to it than the others, because the others talked about "the salmon, the salmon, the salmon," and the Netsilik talked about the animals, and the plants, and the culture, and everything that went with it.

In retrospect, this group at least prefers study "in the round" to the focus on one animal at a time which was a stylistic quality of the Man and Other Animals unit.

In these youngsters' recollection of MACOS, we find that attributes of behavior, both other animal and human, are recalled with accuracy and with a good sense of the organizing framework for considering human and animal similarities and differences. There is no tone of condescension in their discussion of the Netsilik; the unit seems to have contributed to a broad, embracing view of humanity and the varying life styles of different cultures.

While only one youngster showed through examples his continued use of the methodology of the social sciences, these boys and girls have a way of observing, relating ideas, and verbally expressing judgments that reflects their work in MACOS. It is surprising how critically reflective they remain about the components of the course. The way materials were organized, the media of presentation (even to the style of illustrating booklets), and the pedagogy of the course are vividly described after a year's time.

The teacher, concerned with interpersonal development, and focusing the course on the question of man's humanness, was a critical element in the emphases these students selected and remembered. Ellie mentioned in the group interview:

> We got sort of lost sometimes in the course, with all the different things that we studied, that we often had to refer back to the question of what makes man human. You know, it didn't come up in the readings.

From observations and interviews with the teacher, we know she stressed consideration of the overriding questions of the course. These youngsters remember her with fondness as the person who made the materials cohere.

Kathy: I think that some of the things Mrs. ______ brought up, I guess they weren't easy to see... we got into discussion and everything. That made it more interesting.

Ellie: Mrs. ______ is a good teacher for that kind of thing.

Given able youngsters, a supportive school environment, and a teacher who believes that the classroom is the place where students and teacher share together in learning, MAN: A COURSE OF STUDY seems a powerful piece of curriculum that resonates in the minds of boys and girls long after the year of study is over. The interview analysis that follow, show that its power extends to a range of classrooms from city to suburb, and that special problems of teacher style and student ability, while mitigating the total possible effectiveness, do not destroy its essential strength in motivating children to think seriously about its content and to find pleasure and a sense of competence in its interactive pedagogy.

Case Study of a Suburban Classroom

In another classroom in this same suburbar system observations and student and teacher interviews were conducted over the year. The following is an intensive case study based on the collected data and centering on the interaction of teacher style, classroom climate and student learning.

The teacher was in her early thirties and in her tenth year of teaching at this one school. According to the classroom observer, she appeared very confident and relaxed, sensitive to and concerned about the needs and interests of the students, imaginative and creative in devising and scheduling tasks to motivate youngsters. He described the teacher's style as "emphasizing the goals of free expression, confidence in one's ability to express thoughts and feelings aloud, confidence that what one says is important, that other people are interested in it" and noted her lack of concern with the content of social studies instruction per se.

Consistent with this description are the teacher's own comments regarding her general goals in the social studies curriculum and the relationship of MACOS to these goals. What came across clearly in her statements during recorded interview sessions was the fact that the broad scope of the MACOS materials gave her the flexibility she needed to follow through on areas that were of greatest interest to her students and provided her with the opportunity to pursue her own particular interests in interpersonal communication and involvement.

The teacher expressed her lack of concern with pursuing specific content goals in her social studies program. For her, materials were catalytic agents. She considered it to be much more important to get students involved in a project or excited about an idea than to have them pursue the more specific goals of any one course of study. When her class expressed interest in a particular lesson or idea, she dwelled upon it to advantage and did not concern herself with the possibility that there would not be enough time to cover the remaining booklets, films, games or other projects of the course.

> (Why are they spending so much time on classification?)
>
> I think I spent more time than most people. But they had so much fun doing it. I figured this was sort of an interest area. When you get them you sometimes have to capitalize on it. I did show a film strip....that they were just fascinated by. They insisted that I show it again...

Through her use of the MACOS materials, this teacher felt she was able to gain perspective on the interactive process of the students:

> (Through the course have you found out anything about the children -- about the way they learn?)
>
> In terms of communicating with each other, I've found that they will talk with each other about the things rather than come back to me. If we're sitting in a circle and I start a discussion or I've planted a seed elsewhere to start the discussion, they can discuss with each other, on a given day. Sometimes they can't possibly do it. Like this morning they had a very fine discussion, not with me, but among themselves. I was there. You learn who the strong ones are, verbally, and who had lots of ideas, and you notice the kid who always repeats what someone else says. He doesn't have anything to say himself, but he has to say something, just to protect himself...

Three girls and three boys representing a wide range of academic ability were selected from this classroom to be interviewed regularly throughout the academic year. (A tracking system was not used at this school.) Although it would be inaccurate to refer to one or two of these youngsters as being typically average or above-average, it is possible to sub-divide the interviewees into two broad achievement levels -- the average to above-average and the below-average to slow. The distinction between these two groups was much more apparent during the first half of the course and became less noticeable during the interviewees' study of the Netsilik. (This factor will be more fully discussed later in this report.)

A significant proportion of time was devoted to group work by the teacher, who concentrated her efforts on the interactive process to such an extent that the impact of her approach to teaching was apparent during interview sessions. The ease with which most of the youngsters interacted with each other and expressed their ideas was on a level rarely encountered in other interview sessions with youngsters of this age group. They viewed their experience in their classroom as a cooperative venture in which teacher and students participated on a relatively equal basis. They felt confident and relaxed when expressing their ideas in the classroom, as well as to the interviewer.

Analysis of the transcribed interviews revealed that the average and above-average students raised an unusually large number of questions which were aimed at clarification of concepts presented in the materials. The following excerpts from interviews conducted with these students over the course of the year show the range and depth of their concerns.

On Natural Selection:

D. (If an animal's environment changes, would the animal have to change in order to survive?) Yes. It would take many centuries, but he probably would. (Could you give me an example?) Can I take a different animal? (Any animal would do.) Say, the giraffe. He's used to eating off the high trees. In a year, all the trees are dead and they're all down on the ground. Sure, they can spread their front legs to put their head down, but it hurts after about an hour, so they'll just have to get a shorter neck after many centuries. That's what I don't get. How they get a smaller neck. (How it happens?) Yuh....Someone takes a sledge hammer and hits him over the head?

On Innate and Learned Behavior:

B: What I don't get is when they give a warning call, and a little baby is over there and I'm here, would the baby know enough to go to its mother? Or is it instinct or urge? Or what? Does he know the call?

On Reproduction:

(Is there anything else you would have wanted to know more about?)

T: How they...How the animal /baboon/ reproduces offspring.

B: Well, in the salmon we saw how they did that, and herring gull, it showed how they...out of the neck, you know. But the baboons, it just showed...the first film we saw, that was the only thing we knew about it, when the young baby cried for his milk and got it, but it didn't show how they did it, you know.

(That's right, come to think of it. What about in the films -- Did they show anything about reproduction in the films? Anything at all, that you remember?)

B: No, not for the baboons, because it didn't show if the female just did it alone, or with the male helper, or what.

In **contrast,** the slower students who were interviewed did not ask questions. They were quite vague in their requests for further information, and although all of the interviewees stated they wanted more information, the slower students apparently had the greatest difficulty in articulating areas in the materials which they found confusing, or lacking information.

(Are there things you'd like to know more about?)

I'd like to learn more about baboons -- I think we learned a lot about the gulls and the salmons, and I'd like to know more about baboons.

(Do you have anything in mind?)

Just like to learn more about them.

The slower students also appeared reluctant to express opinions about the materials and frequently resorted to the convenient response, "I don't know,' when questions were directed at them:

(You saw the film on the herring gull. What did you think of that?)

It's pretty.

(What did you think of that compared to the film on the salmon?)

I don't know. Birds don't live under water. And salmon don't live in the air.

(Did you like one film better than the other?)

Yeah.

(Which one did you like better?)

The salmon one.

(Why?)

I don't know why. Cause...I don't know.

The more capable students' approach to "problem" situations showed a keenness of perception which the slower children did not exhibit. When asked to use their imagination to describe what they would see if they were to go to an island to study herring gulls, they stated they would look for specific types of behavior which they did not completely understand. They were not particularly interested in repeating to the interviewer information which they felt they already knew and understood. They were much more involved in analyzing the "situation" for their own purposes and in seeking information which would further satisfy their own questions about gull behavior.

(Suppose you went to an island...to study gulls. What do you think you would see?)

B: Find out more about how they get their territories, so that no gulls will come on.

(You're going to look for specific things, then?)

B: Yes...how they mate.

T: What else they eat. How many...what do they do in their life? I mean, they eat, they sleep, they mate.

B: What do they do in-between times?

The slower students, on the other hand, operated on a noticeably lower level of conceptualization. Their responses lacked the imaginative approach so noticeable in the responses of the other students and were characterized by a descriptive quality in which information gleaned from the booklets and films was repeated.

Comprehension of Content:

Life Cycle:

All but the very slowest child interviewed in this class were able to describe a life cycle and compare the life cycles of different animals:

> (What's the life cycle of a herring gull?)
>
> Well, usually you can start off anywhere in the cycle. So there are the mother and the father get together. They mate. They build the nest, and the mother lays the eggs. The eggs are hatched. They incubate it, and then they're hatched. They grow up, get food from the mother by pecking the red spot, and when they're grown up, they do the same thing that their mother and their father did.

****

> (Do you think animals and human beings are very much alike?)
>
> M: Yes.
>
> B: Not in dependency, though.
>
> (What do you mean by that?)
>
> B: Well, like the salmon don't even have it. They just stay in the stream for about a year, and then they just go. Then they come back again. They don't have any parents at all...

This teacher evidently spent a considerable amount of time introducing this particular concept to the class -- perhaps too much time, in view of one youngster's negative reaction to this part of the course:

> (What do you think is the hardest thing you've done?)
>
> Sitting while shutting up while watching the salmon life cycle.
>
> (You didn't like studying that. Why was that?)
>
> Well, I made like I did, but right now, since Miss __________ isn't here, I'll tell you the truth. No, I don't.
>
> (Why not?)

> Well, it just didn't interest me very much.
>
> (Why was that?)
>
> Well, she kept talking about the same thing for days until she finally got onto the next thing. We saw more movies on the life cycle. You could get pretty bored.

Innate and Learned Behavior:

The slower students had difficulty with the concept of innate and learned behavior. One youngster was unable to define either innate or learned behavior. Another was able to define the two types of behavior, but his examples were often confused:

> (Do you think you could explain what is meant by innate behavior?)
>
> Innate behavior is there when you come from birth. It's like, innate behavior is like they have the urge to like scratch themself, to clean themself, and they have that urge to peck at the mother's red spot and the father's, and they have...that's all.
>
> (Do you do anything that is innate?)
>
> We learn to talk.
>
> (Do you think there's a difference between innate behavior and learned behavior?)
>
> Well, learned behavior, the mother will teach it. Like we go to school and we learn things, like. Innate behavior is to do on your own. You get the urge to do it.

When the average and above-average students discussed innate and learned behavior, their responses revealed much less confusion, although they still expressed their uncertainty regarding the differences involved.

> B: In one of the booklets we saw, you had to do something in order to learn whether to do it again and again, or just once. Like the bear, he went over to the cactus and touched it. He learned he shouldn't touch it again, because it hurt it. Like if we jump in the river and we almost die, but luckily right when we were going under, someone came and rescued us. We'd know if someone told us to do it again, we wouldn't do it. We learn not to do it.

(What do we mean when we talk about behavior?)

T: Instinct behavior and learned behavior, which they are born with, and which they learn by their parents...two different types.

(How would you explain to someone what is meant by innate behavior?)

T: Innate behavior would be like you incubate the eggs when it's their generation to lay the eggs and to feed them when the babies peck at the red spot.

(Can you think of something that would be learned behavior?)

T: I'm not sure, but I think to preen themselves....

...What I don't understand about the herring gulls, they fight off their predators to protect -- they fight off other herring gulls to protect their chicks, and when the chick doesn't peck at the red spot, he doesn't get food. They just leave it alone, and it seems like -- I think they fight off predators because it's an instinct that they have to have the territory, because I don't think they care anything about the little chick if they would let it starve if it didn't peck.

B: And they wouldn't fight if they didn't have territories. I think it's instinct, what you say is instinct, because they wouldn't have nothing to fight about if they didn't have territories...I don't agree when you said they only fought because they were protecting their own chicks. I don't agree with that, because they are really just protecting theirselves, because they are fighting off, so it must be an instinct.

T: To keep the territory. They want to live someplace.

B: But they don't really care. I think the only time they really care is...I think the only reason they fight off the predators is urge or instinct. They don't really care much about their chicks. Like a male don't go over to a female and say, "That baby chick hasn't been eating lately. I think I better peck on the red spot near her so that she can eat." They wouldn't do that. They don't have feelings.

T: And when the chicks get older and when they are a different color, the parents will attack the chick unless they crouch down. They don't care about them. They better scrouch down, or else they are going to get killed by their own parents.

B: ...If someone died and they took a human brain and put it in a herring gull, it would show their feelings would go into the chick, and they would protect them, and then those baby chicks would do the same thing to them, and then maybe everything would change. So I don't think they have free power, free will to do what they want to do. I think it's just instinct and urge. There wasn't one thing that I saw that they had to do on their own free power, except preen maybe...What I don't get is when they give a warning call, and a little baby is over there and I'm here, would the baby know enough to go to its mother? Or is it instinct or urge? Or what? Does he know the call?

T: He's learned that his mother's there and she'll protect him.

B: Yuh, but what if he's just born and he's going to get food, and he hears the warning call and never heard it before and never heard what to do? How would he know what to do?

T: Yuh, but the males always protect the young, so, and the female, so I think they would get them or something. Cause the dominant males, it said they loved the babies, and they think they are attracted to them, so they'd be watched. The little infants, they wouldn't be away from their mother. So if the mother hears the warning call, she'll run away, and then the baby will learn that means run away.

Stimulated by a discussion of innate and learned behavior, one youngster very enthusiastically revealed her awareness of the focus of the course:

T: And it doesn't seem as if the salmon plays. That they have any contact with each other except when they're mating, you know, the eggs and everything. But they really don't...Baboons, they play with each other, and they care about each other. But the salmon, it doesn't seem as if they care at all.

(What about the herring gull? Where would they fit in?)

T: Well, they don't, really. The parents are the, really, only ones who sort of care for them. They feed them, but, you see, the baboons, they learn, you know, they wouldn't feed them. They feed them because they have the instinct. When they are pecked, they have to regurgitate food. But they wouldn't feed them otherwise. And the territories -- if the chick wanders out of its territory, it would be killed by another one. And it doesn't seem as if they care about, because they would kill each other just if they were out of the territory....

Baboons, they learn much more. I think the salmon learns the least, then the herring gull, and then the baboon, and then the Eskimo! And it's going to be all a step higher! And you have to do this, and they don't have, like, their own free will. Probably if they didn't have that instinct, I don't think they would want to swim upstream.

(Do you think we have unlimited freedom, or do you think something controls us?)

T: Laws, that's all, 'cause that's just for safety. But we can do mostly anything we want to. Like we don't have to.

The youngsters drew on their knowledge of innate and learned behavior in a later session when they became involved in relating their new understandings to their study of man:

(What did you think about the films you've seen on the Eskimos, compared to the ones you saw during Man and Animals?)

B: I like the Eskimos better, because he has free will.

(He has what?)

B: Free will. Because they have a brain like us, you know, and they can...Well, he doesn't have to do everything on instinct. He has a lot...he has the ability to do it. He has his arms to eat, and....

T: Well, in a way everybody has his instinct, you know, to keep their...to keep alive.

B: Yeah, but the salmon, it's like, it's like they're robots or something. They just go on instinct alone.

T: You have an instinct to want to eat, to feel hungry, things like that.

M: Not an instinct to feel hungry...you feel hungry.

T: Yeah, but it's an instinct...an urge to get food.

M: An urge, an urge.

T: An urge to get food when you're hungry...

Natural Selection:

Of the six interviewees, only one boy -- the brightest of the group, whose father, incidentally, is an anthropologist -- was able to describe the process of natural selection adequately:

> A long time ago, when the baboons began to be small and, you know, once there was a big one. And a predator comes along, and it can defeat most of the small ones, but the big one stays alive because it's larger and it could go faster or something. And then the big one would reproduce, and there would be more big ones, and they would survive, and it would keep on going. There would be more and more and more, and so all the little ones were wiped out, and all the big ones survived, because they were stronger.

But his mastery of this concept was not complete, as revealed by the inconsistencies in his response during the same interview session:

> We'll probably change. We'll probably...We used to be, 'way back, real big so we could climb trees, and as we didn't need to climb trees, our toes got smaller, and...

Another youngster, an average, student, was able to explain the process of natural selection when approaching it in the context of a specific situation:

> (If a friend of yours came up to you one day and said to you, "Herring gulls live in deep, dark forests," what would you say?)
>
> I never went into a thick, dark forest. If I went into the forest, I would see if I could get one and study it.
>
> (Do you think that the gulls would live in the forest?)
>
> No.
>
> (Why not?)
>
> It could be. I doubt very much, but it's possible.
>
> (Why would you doubt it?)
>
> Well, in a thick, dark forest, there is much greater possibility that he would get killed. Animals, badgers, bears, could be a lot of animals or there might not be food.
>
> (So you think it's possible that he could live there?)

> Yes, if he's lucky. Maybe around the spring where there is food.

The slower students did not understand natural selection, as was evident in responses such as the following:

> Well, if he was brown, and his environment was brown, he'd have to change his color somehow, or he'd have to die. Like if it turned yellow, he'd have to change his color to yellow, or he'd have to die.

The Netsilik

When the class began its study of the Netsilik, a change was made in the composition of the group of interviewees: the very slowest child was dropped from the group. Analyses of the slowest child's responses had revealed a consistent lack of understanding of the concepts inherent in the materials, an inability to draw on what little information had been acquired to meet new situations, and a strong reluctance -- or perhaps inability -- to evaluate the materials except on a very superficial level. Another child, who fell into the average and above-average grouping, was added. This change had the effect of narrowing the range of response that could be anticipated.

Throughout the first half of the course, the interviewees had made occasional comparisons between the behavior of man and that of other animals. References to the Eskimos indicated their initial feeling that Eskimos were very much like themselves.

During their study of the Netsilik, they talked about the Eskimo in a manner which indicated that they had a strong feeling for the Netsilik way of life.

> They...travel. Every year, they have to go catch the caribou, and then they catch seals, but we don't just keep doing that every year. We do different things, but they have to do that for a living.

******

> (Does Eskimo life seem very routine to you, or do you think it seems very different from day to day?)
>
> Well, the Eskimos, they live like us. We have to go to work, and the Eskimos have to go to work killing seal and caribou and fish. So it's really

> a little like us, and, like, instead of getting money, they trade things, and they just go on and on to keep alive. They have to keep killing, and so their life is somewhat like ours.

****

> (Did any of the films make you like the Eskimo or admire them in any way?)
>
> Well, there was one film, I didn't like the kid too much, because the dog had little puppies inside and he started kicking them... but there were some films when they... well, in all the films I've seen, I liked the way they work and how they handle things, and how they get their food, and how they make tools. So I liked them in some ways, and some ways I didn't....

The Netsilik were also viewed as people with feelings similar to their own:

> (Did you learn anything about how Eskimos feel from /the film/?)
>
> All you could tell was that they didn't like it, because all the bugs were on them... all the bugs, and the dog had to carry a pack. They must get really tired, because the man has to carry a pack and has to carry the boy, and you could tell the lady didn't like the water, because the man had to go over and help her, and they'd stop about every hundred yards or so, because they'd be tired.

****

> (Did you learn anything from the record about the way Eskimos feel?)
>
> Yes, they have feelings for each other, and also they tell stories with each other, and they have a kick out of it. They have fun with each other, and the way they believe is a special way, like they all believe it. Maybe some don't.
>
> (Do you think they're happy or sad people?)
>
> They have feelings. Sometimes they're sad, and sometimes they're happy. A lot of times they're happy. In the movies, they're happy.

****

> (What do you think Eskimos really care about?)
>
> ...their children...just they sort of love the children so much, and the movies...they take...they want to keep them occupied and just really let them play and just really love them so much....

> (Were you in this play about Itimangnark?)
>
> Yes, I was the mother of Kingnuk.
>
> (Oh, you were! Did you have a lot of fun doing the part?)
>
> Yes.
>
> (Did you think it was kind of funny?)
>
> No. I thought it was real, because it could really have happened. He came all the way from where he was, because it shows how much he really wanted her. Sometimes they say the Eskimos don't have that much feeling...but the Eskimos had pretty much feelings.
>
> (Do you think that they have the same kind of feelings that you have?)
>
> No.
>
> (How were they different?)
>
> Because we wouldn't dare just go killing animals and eating them. That's what happens, but we don't know it. We know it, but we don't just eat it plain -- just kill it and eat it.
>
> (We cook it, you mean.)
>
> Yes, and some of us wouldn't dare go out and watch ourselves kill it.

They expressed their admiration for the Eskimo's ingenuity in adapting to his environment:

> I admire them sort of for the way they live, because I don't think I could go out and live like that in that weather and eat raw meat. It's such a hard life, you know, to travel and not really have a home. And just everyplace you go, make another house and you have to hunt and you have to...It's just, you just have such a hard life.

******

> (Are Eskimos interesting people to learn about?)
>
> Yeah, they are interesting in some ways -- How they use the Eskimo seal skins and caribou skins, and how they plan to get their caribou down, and how they make those images out of rock -- Inuk-shuks -- to make the deer, when they see it run from it and that heads

> them down in that direction...and how they make those boats, the kayaks, out of skins and wood.

Common to their discussions both of the Netsilik and of animals was the universal theme of the struggle for survival:

> They (the salmon) couldn't care less, just as long as they stay alive. They don't have feelings that much, really.
>
> ******
>
> (What do you think makes a successful parent in a herring gull?)
>
> To be a successful parent, the parent has to know when to feed the baby. It won't feed him unless it pecks at the red spot. A successful parent means the mother has to incubate the eggs so the eggs will live, care for the young, and just take care of it.
>
> (What do you think all animals have in common?) They all adapt to their environment. They make do with what they've got. (Are you an animal?) Yes. (Why?) Well, we eat and breathe, and we see. We adapt to our environment.
>
> (What do you think that Eskimos really care about?) I think they care mostly about the food, and they really care about their children. They'd give them the food if there was not enough, because the children can go on and they can grow up and have children so that the children can grow up and be like that.
>
> (What do you think the Netsilik really care about?) Whether they get food or not to survive.

During the course of their study of the Netsilik, however, the interviewees began to reveal very mixed feelings about the Eskimo. Reactions ranged from the sympathetic as noted above to ones of disbelief and dismay. There appear to be several reasons for their ambivalent feelings. The first seems to center around a "distance" factor -- the lack of opportunity for personal contact with the Eskimos. As one youngster put it:

> (Do you think that the Eskimos feel about the world the same way that we do?) I don't know. The only way you could find out about this is to spend about six to eight months with them. (Well, you've studied like about the story about thunder and lightning. Do you think that's sort of the way we think about thunder and lightning and events that happen to us like that?) (You really don't know?) No. You'd have to see them in person sometime and ask them a lot of questions to really know what they're like. (Do you think that seeing the films makes any difference? Or do you still think....)
>
> I still think the most importance would be if we were able to see one in person.
>
> (And interact with them, sort of....?)
>
> Yeah. Ask him about his homeland, what it's like in the different seasons...

Another youngster referred to the language barrier which she felt existed between herself and the Netsilik:

> (I want to ask you some general questions about the Eskimos. I guess what I want to know first is whether all this stuff seems real to you.)
>
> I think we probably get the idea -- from the pamphlets and the records and stuff. All those stories. The records, they don't -- they just sort of seem like you're making them up, because you don't really hear, like, the Eskimos. It seems like you're just sort of, you know, making everything up. Like you're telling stories. And it's all so stupid that it doesn't seem that it's real, you know.

Another reason for their ambivalent feelings is related to the students' tendency to interpret the stories and beliefs of the Netsilik literally. There was no indication in the interviews that the meaning of myth had ever been explored in class. As a result, they found them confusing and difficult to accept, because they were struggling to understand them on a rational level.

(Did you hear the record Words Rise Up?)

M: Some of them are so confusing that they don't make sense. One says the world collapsed and all the animals died.

B: They believe that the world cracked up and these two men got married, and one man goes, "I'm a woman," so he turns into a woman. They pick their children by...if they want a boy they go far away, if they want girls they stick around.

M: They just look around if they want girls.

B: Yeah. That's what they believe, and that's how the world started....

T: But then, you know, they have that legend that if you want boys you go far. But they have these special chambers where women go when they are having their baby, you know, and it's sort of stupid, because they know that you know. They tell things like that, and it's not true, and they know it's not true.

B: Yeah.

(So what's the point of the story, then?)

B: It's just to show what they believe. Well, I don't see how they can believe it, to say that if you want a child you go out and get one, and yet they have children. They don't go out and find them in the snow or anything.

No evidence comes out in these interviews, as it does in talking with youngsters in other classes, that comparisons of our myths and Netsilik myths were made to establish a context for viewing myths in their role of explaining experience.

> Most Eskimos, it just didn't seem that they could follow their taboos. It just wouldn't work out, because every time they break them, they really... nothing really does happen. It was unbelievable. They should be able to see that nobody really does attack them. I suppose some people do. Because when you see what happens, really happens -- then if they don't get punished for breaking the taboo....

Most of the children also found it difficult emotionally to accept the more extreme practices of the Netsilik, and this, too, added to the distance they felt between themselves and the Eskimo. Their discussions show a mixture of emotional and rational reactions to Netsilik practices:

(Do you think that Eskimos have feelings the way you have? Are they very much like you in...?)

K: Not...well, sometimes. But they don't really have the same feelings we do, because they live in a whole different environment, and they need to, like, be rough with the dogs, or else they won't get the way they want. And they need to kill the girls, because they're no good...they don't have enough food.

R: And we would think this was awful, and it's just nothing to them, to kill a little baby, you know, or to push around a dog. And it seems so terrible to us. So a lot of the time, the feelings are different....

T: They sort of don't have any, like, any feeling, though, like for their dogs and everything like that. They kill the girls, you know, the babies, when they're first born if they don't need them.

B: That's not very nice.

T: They just, you know, they don't really have a feeling for, like, humans. I mean, once the kid grows up, I mean, they like him a lot, but...

(Why is this so?)

B: I think they need men more than they need women.

M: Yeah, because the men can do the work.

B: Yeah, because if we were there, we would have to depend on the man, because they're the ones who have to go hunting.

T: Yeah, and you know, they kill the orphans and stuff because they don't want to feed them or anything. That's sort of mean, because it's a person.

B: All they do is knock off people...knock off animals, too.

T: It's sort of like when you're no use at all, they kill you.

B: Like, you live your term, you're useful...but after you get a broken leg or something or you're not useful, they just kill you.

(Well, what if they let all of these people live?)

B: They'd have to get more food.

M: They'd have to get more food, and they'd have to take more care of them, and if...it's kind of to preserve the people that are after them. If everyone didn't kill their old people who just sat around eating and couldn't do anything... the caribou would just die out faster, and the whole sort of Eskimo thing would just die out.

T: But it's still...

M: Well, if you were caught in a building, and there was enough air to have three people for as long as...they had to drill a hole through, and it would take an hour to drill a hole through, and there was only enough air for an hour for three people and there were four people in the room, what would you do -- let everyone die, or one person die?

B: Sacrifice yourself....

(Does the Eskimo family seem like your family in any way?)

T: Uh-huh.

B: Cause everything's so alike and stuff like that. In a way, we've got it much easier.

(What do you think, M_____?)

M: Well, they're sort of like it, because the father goes out and does the work, and when they go out hunting, they do it with their relatives. They don't go out hunting with a complete stranger or anything. So they do it with someone who is a friend or a relative, and it's...

B: Yeah, but we don't go to work with a rel...you know, my family can't work in all the same company, you know.

T: Yeah.

M: It's possible.

B: No, it's not.

M: Some families do.

B: Well, what would happen if there was only one job and one person wants it?

M: Well, if they make their own company, like a shoe store, they can have their kids working for it.

B & T: Yeah.

M: Oh, big deal.

T: And stuff like -- but I don't think it's...we're educated and they're not, and it's sort of strange for us to see humans who don't go to school or anything, you know, because...

B: I don't agree, because the Africans, they don't have the money, and Netsiliks don't have the money, and if they don't have the money...

T: I know, and no money!

M: They have no use for money.

T: I know, but it would be real funny if one day they started making hunters come out of the stores and industry...

B: And the father comes home and says, "Hey lookit, wife, I got a new pair of shoes."

T: "I bought a new pair of shoes."

B: And then he came home with a leopard skin on him.

Although the interviewees were getting somewhat silly toward the last part of the preceding quotation, the turn which their discussion took is an indication of the lack of identification which these youngsters felt with the Netsilik, particularly with reference to the Netsilik practice of infanticide and senilicide. This quotation is especially revealing, because it indicates the amount of misinformation on which these children seemed to be basing their reactions to the Netsilik. Nowhere in the material were they told that infanticide or senilicide is practiced on a wide scale, yet they came away with the impression that "All they do is knock off people...," and it was against this idea that they had a natural and strong reaction. Because of their acute reaction to senicilide and infanticide, it is understandable that they also reacted strongly against the hunting and slaughtering of animals, so vividly covered in the unit:

M: I think the film is so sickening...I can't look at them.

T: I hate when they cut open that caribou.

At the same time, although they found it difficult to accept the ideas of senilicide and infanticide, they were able to understand the need for the killing of animals as a requisite for survival. As one youngster put it:

> (How did the film make the kids feel?)
>
> Well, some thought it was kind of disgusting when they cut open the fish, but I think maybe that's how they live and they just had to do it.

Characteristic of all their discussions centering around myths, senilicide and infanticide was the students' constant struggle to understand the information to which they had been exposed. Just as they had done earlier in the course, these youngsters were struggling to understand the course content as it was presented to them (or as they perceived it to be), once again reflecting the teacher's focus on process as opposed to content. For example, the youngsters quoted in the following excerpt are grappling with the problem of interpreting a Netsilik myth:

> M: Well, I don't see how they can believe it, to say that if you want a child you go out and get one, and yet they have children. They don't go out and find them in the snow or anything....
>
> B: Well, then, how would it be if when the first Eskimos lived, they had to sort of go and find children, you know, then -- how do they believe -- then, they just get it, you know, out of their -- then they just get it. Then how can they believe it was a...I don't get that.

At a later point in their discussion of the Netsilik, these same youngsters wrestled with the problems of survival and senilicide.

> B: Yeah, and you know, they don't want to feed the orphans and stuff, but if you go caribou-hunting and you get a lot of caribou, they share it with whomever is there. Like if there's three other families there, they'd share it, but they wouldn't do it with just one orphan.
>
> T: They'll share it with the family that has already got caribou and hasn't got as many...but an orphan who can't hunt or anything...they just don't give them anything.
>
> M: Didn't Miss __________ say that their son was adopted?
>
> B: Yes.

M: Well, they had to care for orphans. They loved their son a lot, and he must have been an orphan for them to adopt him.

T: Yeah, but they probably...well, they needed a boy...

B: They didn't *need* it.

M: He doesn't do much, he just plays around and lugs them down.

B: It shows that they love him, because they have to get more caribous for him...to survive.

M: When they were walking across that lake, they were carrying him on their back and that was harder...and if he wasn't on their back, they could have carried something else.

T: They want him to grow up and learn how to hunt his own caribou.

(For what reason?)

B: His family...

T: His family...

B: The Eskimos can keep going.

T: Yeah...sort of want to preserve their...and keep going.

Of particular interest at this point in their discussion is the breadth of the students' perspective of the Netsilik -- their realization that the individual Netsilik is a member of a wider culture and that his individual efforts contribute to the survival of the group. They then delved into the whole area of senilicide and into a consideration of the individual's personal response to this practice:

(You're troubled by it.)

T: Yeah. Didn't they say that they don't know whether they're going to kill the old people after they become a nuisance to the family...when they can't do anything...well, you could always sort of still live.

M: It's sort of, the person who they would kill would feel... not very...

T: When they kill him, he's not going to feel anything.

M: No...if they keep doing this, I don't think people would want to live just till they were old and useless and then have to be killed because they were no good anymore. It's sort of living and growing up to be killed. Nowadays, always people grow up and they know they're gonna die.

T: Yeah, but it's a different thing, cause you know you're gonna die, but you're not gonna...it's a different thing when someone kills you cause you're not useful anymore.

M: But you don't know that you're gonna be killed.

B: You probably do.

M: No..but it's different if someone wants to kill you because you're just no good anymore. It's a different thing when you die, but you don't know you're going to be killed.

Because senilicide was not explored extensively in this classroom, these youngsters erroneously viewed it as an act of murder. They failed to see that the Netsilik considers it his duty to sacrifice his life when he becomes burdensome and can no longer contribute to the well-being of the group.

In spite of the youngsters' highly charged reactions to specific sections of the unit, their reactions to the course in general were consistently favorable. Student reaction to the salmon unit was least favorable in comparison with the response to other sections of the course. The problem basically seemed to center on the fact that of all the animals studied, including man, students found the salmon to be the least complex. As indicated earlier, perhaps too much time was spent on that portion of the course:

T: I liked the herring gull as much as the baboon, because they were two different things and they were both interesting. The salmon was just too simple..

B: It just swims. The herring gull can walk on land, fly in the air, take care of its chicks and stuff while a baboon does more. It climbs trees, preens, plays, eats, sleeps. They have a more easy life than the herring gull. I'd rather be a human being or a baboon.

The salmon films, however, did appeal somewhat to a few youngsters. What they found most fascinating was the salmon's trip upstream.

(I know you've seen a film of the herring gull since I saw you last. What did you think of that?)

It was a good movie, because it showed how the babies get camouflaged in the rocks with all those dots on them. And how...the mother keeps then under her to protect them from the water, rain and stuff. And from cold weather. If they get too close to warm weather, then their feathers will stick and they won't be able to fly.

(What did you think of that one compared to the one you saw on salmon?)

Well, the salmon one, they didn't have -- their mother couldn't take care of them or anything, cause their mothers had died off. They float downstream. So they were on their own. They didn't go too far from the nests where they were born, the salmon.

(Which did you like better?)

The salmon.

(Why was that?)

Cause I liked how they...I like how they jump waterfalls and fight the high currents.

(Why didn't you like the other one?)

I liked it, but not as much as the other.

A rule of thumb with regard to the degree of interest expressed by these youngsters is: the more information and activities, and the more complex the subject,the greater the interest:

(What have you been doing since the last time I was here?)

Oh, learning Eskimos.

(How do you like that, compared to the Man and Animals stuff?)

It's hard, but it's enjoying. It's got a lot of material in it, it's not too much to read, and we've got three booklets we've got to hold on to, the one on the Netsilik Eskimos, and it's a good study, but not as...I think this will be the best.

(Do you think it will be the best? Why do you say it's...?)

It's got the most study in it, I think; the most study and research in it.

(How do you like Eskimo stuff compared to Man and Animals?)

B: I like the Eskimos.

M: I don't know...

B: They're human.

M: Yes. It's more fun to talk about someone that's sort of on the same...let's see...When we were studying baboons, we couldn't play any games, like about how the baboons got their food or anything, because the baboons are on a lower intelligence level than we are, and it just wouldn't work. But with the Eskimos, we know how they get their food, and we can demonstrate it with the games.

B: But we like to see how people live in different parts of the country and stuff like....

One youngster couldn't state a preference:

> (How does this unit compare with the Man and Animals; you know, the baboons and stuff? Which did you prefer?)

T: Well, I'd rather study about the Eskimos.

B: You get to see how other people live and in other parts of the world. I don't know. I was sort of stuck between the salmon and the Eskimos and the baboon. I didn't know what I liked, but I liked them all so much. Everything's completely different, like the baboons and the salmon, and then the Eskimos and the salmon, and then the Eskimos and the baboons. And it's just so fun to read about all of them. I didn't really have a favorite.

In Conclusion

In an attempt to tie together the above observations, several factors present themselves as of significance:

In the Man and Animals unit, all that the students had mastered with consistency was the information centered around the life cycle concept. With respect to the concept of innate and learned behavior, the slower students showed some confusion in their responses; the brighter students showed much less confusion, perhaps because they drew primarily on those examples of behavior actually discussed in the materials.[1] The latter, however, did express the difficulty they had in distinguishing between the two types of behavior in their questions.

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[1] The limited range of responses that were given seemed to suggest the possible need for the inclusion of a great many more examples of innate and learned behavior in the unit. This could serve to

Responses in the area of natural selection were disappointing, although not unexpected, since this topic was not covered extensively in the course. Only one very bright boy seemed to have a notion of what it was all about, but even then his comments were not consistently accurate, raising the question whether his one apparently keen insight into the process of natural selection had been the result of pure chance.

It is evident that the interviewees had begun with a highly intellectual approach to the content, but during their study of the Netsilik, there was a definite switch to a highly charged, emotional approach. Although the students came away with a good sense of the Netsilik way of life, the youngsters had great difficulty in coming to grips with some sections of the Netsilik materials. Differences in practices (chiefly senilicide and infanticide), eating habits, language, environment, and in type of education (one child in particular referred several times to the fact that it seemed strange that they had no "education") -- all seemed to contribute toward making the Netsilik seem strange and somewhat incomprehensible to these youngsters. In addition, most of them were unable to understand the meaning of the various Netsilik legends with which they had become familiar, mainly because they interpreted the material literally and could not relate it to their own experiences.

What was noticeably lacking in their discussions of the Netsilik were references to the concepts introduced during the first half of the course. Both the brighter and slower students became equally involved in expressing their feelings about the Netsilik way of life, so that differences in levels of response which appeared to be related to the students' ability levels during the Man and Animals section of the course seemed to play a much lesser role during the Netsilik

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orient the course content around the more gross differences between innate and learned behavior, which apparently are not clear to the students. Giving more examples might also serve the purpose of creating an accumulative backlog of data from which the students could draw in their analysis of newly encountered examples of behavior.

unit. The concerns of the interviewees were much more general, and responses were highly personal. They seemed much more concerned with sorting out their emotional reactions to the Netsilik than they were with making more explicit the cognitive issues involved.

In search of an explanation for the strong polarity between the responses to the Man and Animals Unit and to the Netsilik Unit along cognitive-emotional dimensions, it is apparent that the working style, concerns, and tone of the teacher had a very direct influence on the way the class responded. The teacher's style placed great emphasis on the expression of opinions in an open manner, on the personal "feeling" reaction of the students toward the subject matter, and on the interactive process of the students. Because of these emphases being placed on process, there tended to be an implicit de-emphasis on content learning.

The reactions of the students to the materials directly reflected the focus which the teacher had given to the materials. Throughout the course, their responses showed the effects of her emphasis on process: **in** the "give and take" quality of the discussion (which seemed to the interviewer, at least, to be quite unusual in youngsters of this age level), in their questioning approach to the materials, and in their freedom of expression. There is no indication that the teacher became involved in helping the students to resolve the questions they raised, with the result that the students failed to master some of the basic course content.

In addition to their failure to master certain content is the more disturbing factor of the youngsters' having carried away from the course a distorted picture of the Netsilik -- one in which the Netsilik are sometimes viewed as insensitive beings who kill the young and helpless, and who explain life processes in strange and incomprehensible ways. This appears to be the direct result of the teachers' lack of concern with content in her effort to "release" the students' full potential in the area of verbal expression. These youngsters reponded well to the teacher's emphases, but were evidently not given a consistent and solid context in which to operate. They asked content-related questions but failed to find the answers; they expressed their confusion and their personal feelings, but failed to resolve them through a consideration of more objective data.

The experience in this classroom highlights the need for a multi-focussed approach which maintains the integrity of the course content even when the teacher's prime concern is with process. Emphasis on process for its own sake can have negative effects when the content which the teacher is using as a vehicle for developing certain skills is as potent, and perhaps controversial, as is some of the material in MAN: A COURSE OF STUDY.

Interviews in the Center City

A rewarding aspect of interviewing youngsters is to watch them grow over the year. As children in the center cities worked with MAN: A COURSE OF STUDY, we particularly noted development in the following areas: understanding of the vocabulary of the course and ease in using it, mastery of information, concepts and skills, and reflective criticism of the materials and the classroom climate. In short, they were developing freedom of thought and self-confidence in their abilities. Difficulties in all of these areas occurred, of course, and specific instances of problem areas are noted.

Interview data from two city field sites are here considered -- the same situations described in the section "Interviews with Teachers" so that comparisons of children's and teachers' views is possible. In the first center city system where children's interviews were analyzed, MACOS was one of several innovations, both curricular and methodological, with which teachers in the school were experimenting. This climate of experimentation seems to be reflected in what children make of the course. Their comments about class environment, particularly, reveal a more open classroom situation than in the previous center city; and their speculations about Netsilik life show not only the influence of complete study of the unit, but also a more personalized response to the materials.

Content:

1. The interviews with these children reveal clearly the major themes of the course that have special relevance for youngsters. The ways in which creatures reproduce, nurture or do not nurture, and protect their young are especially intriguing. The struggle for survival of all living things

has a deep fascination.

> I liked the salmon because it shows how animals that don't have to depend on other animals can live. Because the baby salmon, it can't depend on its mother and father because they died when they laid the eggs. The salmon, they live on their own.
>
> What I liked about the salmon, they made me most curious. At first I wondered why do you want to swim up this stream, this certain stream to lay the eggs? And...he does not know he's going to die after he reaches this point. This made me like him more. And I liked his struggle, he struggled very hard to go upstream. And sometimes they'd make it and sometimes they'd fail.

2. These young people are also intrigued by the roles which various members of groups fulfill, be they members of a baboon troop or members of a human society. They do make comparisons of the Netsilik with the animals they have studied. In the interviews, where we had the freedom to pursue their choice of analogy, we learned that their comparisons were indeed based on valid similarities. The children were not simply anthropomorphizing on the basis of primitive or animal characteristics which they attributed to Eskimos; rather, they were selecting truly universal primate qualities that are not only essential for survival, but also promote a state of well-being in species members.

> ...the Netsilik Eskimos run around and find food and the baboons go around on the savannah finding food. And most of the time the Netsilik need somebody to help them--they groom when they're little and the baboon's mother or some other baboon just sit around and groom each other. And the baboon troop at night, the baboons just sit down softly and groom each other.
>
> I think the Eskimos and the baboon are much alike because the male of the family in the Eskimo family protects the family. He's the one who goes out to harpoon the dinner.

3. Overriding goals of the course are implemented not only by the way students work together during lessons, but also by the materials, which

display the value and necessity of stable environments, of continuity, and of cooperation among members of the group. The conversation of those youngsters reveals a growing sense of the interdependence of creatures, and indicates a budding model for considering human needs. The model involves cooperation, nurturance, protection, and the sharing of responsibilities. Study of the Netsilik unit[1] seems to be essential for the development of this model.

> The American mother protects the young and she teaches him...so does the father...the ways of his life after they are gone. And so does the Eskimo mother. They come together and they do things together...It's like a troop, a baboon troop. They all just don't do a different thing or wander off somewhere by theirselves. They're all together. And in times of emergency, an Eskimo family would come together so that they can defend theirself...

4. In general, however, fifth-graders do not think in models, but in terms of specific examples. To illustrate, children who saw the Netsilik as more similar to a baboon than to an American used very specific, accurate examples of similarity as the basis for their comparison, e.g. dominance of the male, moving in troops, needing the other members of the small group in which they travel, and having a kind of territory or "roaming area." They seldom go beyond specific manifestations to organizing concepts. So they need many examples as a base for developing a general idea. The social model described under 3 is a culmination of a year's work that is replete with examples of that model.

As another illustration, powerful footage exists in the Netsilik unit on hunting, on preparation of food for eating, etc. This kind of food-gathering is often defined as animalistic by the children. The city child especially lives within the boundaries of a highly industrialized society cut off from nature. Buying food in a store seems to be the mark of civilized man. Thus, hunting for food makes a creature more an animal than a human, having no similarity to man as the children know him. In many cases specific behaviors are viewed as animalistic because they are rejected emotionally: bloody scenes of the hunt, etc. In such cases, comparative examples serve as bases for more comprehensive understanding.

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[1] These children expressed preference for the Eskimo unit. The main reason given was that "We're studying a real human being."

A young boy makes an excellent statement about the difference between material that is emotionally pleasing and material that is disturbing. He has decided for himself that he will confront the latter.

> There were a lot of things that I didn't like, but I don't think they should change them. Like when they took the animal apart and they skinned him. I didn't like that, but there's no reason why you should change it, because it's true, that's what they did. So, let them. We have to clean fish and take them apart before we have to eat them, too. And just because you don't like it...that's their way of living.

As part of his confrontation, this student is using analogous situations from his own culture to help him put the disturbing images into a workable perspective.

5. The question of the relevance of the materials to the lives of the children is rightly raised by educators. We find an answer in the words of the children themselves. For example, two girls describe the following:

Vera: On the films, I liked the Eskimos best, because when they showed a film, they seemed more like us. They sort of gave me a picture of my family if I were out there. Like the time they were crossing the river. If my father was there, I guess he would cross it first, just to see how deep it was, and then he would

> carry my mother across, and I'm just about as tall as he is, so I could walk across, but my sister would have to be carried. And my mother could help carry something on her head as we walked across. That's one thing in the picture I saw. And my mother always combs her hair and makes my father happy. And we are always together, and they looked sort of happy together. When you're young, whatever you do and your mother is happy, that makes you more happy.

Jacq: If we lived in the Arctic, my father would...like the mosquitoes started biting on the little boy, and the mother tried to protect him from the mosquitoes, and she gave him a balloon to entertain him, and he fished and got food.

For these children, the film showing the Netsilik crossing the water and helping dog and wife across is very powerful in conveying the meaning of human similarities:

> That's what they sort of mean by feelings. They love each other...and they call each other by pet names. And they care for the young.

6. Details of the Netsilik films remembered by these youngsters are specifics of family life, the manner in which humans care for each other, particularly the protective and loving relationships among the family. Similarities between Netsilik and their own lives are usually made using film materials as evidence. We cannot overstress the importance of these ethnographic films as visual triggers of linking images of common human behaviors.

7. As in other groups of youngsters, these children mention the fixed and repetitive quality of Netsilik life, and specify that:

> We're happier than they are, because we have more advantages to do different things than they do.

Both the boys and the girls in this interview mention the narrative and interpretive Netsilik materials as favorite readings. "Songs My Mother

Taught Me", "Songs and Stories of the Netsilik Eskimo", and "Stories of Beginning Times" were specified, each by a different child. In addition, they noted that they liked all of the Man and Animals booklets. It is noteworthy here that the more factual data sources for the Netsilik unit - the data book on the Arctic and Arctic Animals, and the "Journal" of Knud Rasmussen - are very rarely mentioned by children as favorite readings of the course.

Climate of Learning:

1. Children often declared MACOS to be their favorite subject. While this could be viewed with some skepticism (even being chosen for the interview might tip the balance), their reasons for so choosing are explicit and clearly reflect their sense of a new classroom climate. In this city, a child stated:

> Well, you get a chance to say more what you're feeling. In any other class, you're going to have to just write down reports. It gave me a chance to express how I feel about that particular field.

2. Another behavior developed by use of the course - the sharing of different opinions - is demonstrated in children's ease in saying "I disagree, because..." and to give the evidence for their reasons. We cannot, of course, be sure that these abilities to share and express ideas should all be attributed to MACOS; however, there can be no question but that the course serves as a vehicle and as a focus for sharing opinions.

3. Further, children show that they are influenced by the ideas of other children and can change opinions when given better evidence. One child who stressed the similarities between Netsilik and baboons stated

a little later, after listening to his two female classmates:

> I think that the Netsilik are a cross between the American and the baboon, but I think the American is probably closest to the Netsilik Eskimo, because what Vera and Jacqueline said.

Ideas change and grow in this course through each individual's testing of his learning against the interpretation of another.

> (What do you think you learned the most from? What was most helpful?)
>
> I think when we went in small groups for discussion and we gave up our own thoughts. That's all we knew about it -- our thoughts. And then when the other children brought up their thoughts, we learned more.

4. Children's preference for working together in groups without direct intervention of the teacher is brought out in these interviews. As the children express it, work in small groups permits informality, a sense of ease, and the relaxation of authority lines.

> Sometimes, you know, our groups are in students... we're by ourselves. And in this group we can argue with each other and like that...in a small group, you walk up to (a book) and say, "Well, here's that answer, right here."

This is one example of the pedagogic means to achieving shared opinions as noted in 2 above.

5. The course supports the attitude that there are many sources of knowledge, not just a given source such as a textbook. Questions that children raise in the course often have no "right answer." The children begin to recognize this as they collect data and search materials for answers.

...we had books, and we read, and we asked questions...and we read our way through the books and found out some of the answers... and sometimes we didn't find out the answers, and we'd have to look in another book.

There was one question I asked about the herring gull. I asked when they need another island,--the mates, do they stay together or do they break up? And we never found an answer to that question.

A large elementary school in the Northeast provides the second set of city interviews for analysis. With a predominantly black student population, this school utilizes a tracking system in which children are grouped together according to ability and motivation. Since MAN: A COURSE OF STUDY was used in all tracks, from highest to lowest, we have illustrative material about the responses of children in different school groupings. The A class is considered the "brightest" and "most motivated." The D class is considered "least able," "difficult to teach." The interview materials from the A, C, and D classes are the basis of this section, since the B group changed teachers early in the fall and did not participate fully in the new curriculum venture.

Because only one of the three classes covered the Netsilik materials - and this was done on an extremely limited basis - it is not possible to comment extensively on the youngsters' learnings in relation to the entire course. However, these protocols lead to some comments on the special environments of city schools, and on the needs and problems of inner city teachers. Two summaries (5A and 5D) of major themes are given, with interview protocols provided in the Appendix. In addition, a class case study based on both observations and interviews has been prepared for the 5C class.

5A Interviews

Content:

1. Initially, these students find the vocabulary difficult; yet they obviously enjoy mastering it. In a group interview they proceed to string out like pearls all the words they found difficult to learn, and then, in a proud refrain, explain that now they know the definitions but "when they first put the words in the books, they should put the meanings at the bottom of the page."

2. Conceptually, these children are not willing to put aside the notion that animals communicate with each other in a language that humans just don't understand. This problem remains unresolved even at the end of the year.

3. One child notes the importance of films as sources of evidence for exploring the questions of the course:

> Sometimes you never have questions to ask, but when you do, you write them down, then look at the film, and then you know the answer.

4. As the course progresses, do these center city youngsters think about this material outside of the classroom? And do they begin to use the observation techniques and methods of understanding data that are conveyed through the films and booklets? A boy responded to the question below with the comments that follow:

> Int: If a friend said to you that herring gulls live in thick, dark forest, what would you say?
>
> Child: I'd say that they were wrong and that I could prove it.
>
> Int: How?
>
> Child: I'd say, "How many times have you gone in the

forest and seen herring gulls, and how many times have you seen herring gulls at the beach? Where do you see the herring gulls most of the time?" And they'll say, "The beach."

Int: So there aren't any herring gulls in the forest?

Child: Maybe a different kind from the kind we're studying. Like I was at the bird section of the Science Museum, and I looked all around, and I didn't see any herring gulls. Then I kept going, and they had this one special cage for all the different kinds of herring gulls. There are lots of different types.

In addition to his relating class work to a trip to the science museum, he also shows skill at inquiring into a problem. His questions are apt, and he poses them as a framework for reaching conclusions about a problem. In addition, he shows an open stance toward knowledge. He recognizes that he does not know all there is to know about gulls, and he substantiates his tentative position with further evidence from his trip to the museum.

5. These children want complete information, and criticize their study of the Netsilik unit in this regard — they had time only for a short section of it:

Int: How did this compare with the salmon or the baboon?

Child: I still like the baboons best...we didn't see as much as when we saw the baboons. We know more about baboons.

Yet their interest in the Netsilik life is great, and some of them show a real grasp of the Netsilik life style. Others find it difficult to understand why Netsilik haven't developed machines - "robots" - as we have, and why they don't have a more highly developed technology. The limitations of the climate and the nomadic way of life are not clear to them. As in the suburban interviews, these youngsters select as admirable Netsilik qualities their skills in hunting and fishing:

> ...the only part I like about them is the way they fish. That's smart...they catch the salmon better. They build them rocks up.

Completion of the unit does seem essential for clarifying the basic life style of the Netsilik.

6. We find more criticism of the art work in the Netsilik booklets from center city children than we do from suburbanites.

> ...they didn't describe anything good...like, there's a picture in here and you don't know what it is...you can't tell, because of the lines.

It seems a reasonable hypothesis that youngsters who have had more experience with free-form and imaginative drawing, and who have not been encouraged to create simply literal images in art classes, would find the imaginative Netsilik drawings more appealing..

7. A perusal of these interviews makes it possible to understand better the set of values which these youngsters have absorbed over time and the effect these values have on their ability to accept the unfamiliar practices of other societies. Much of what these youngsters express as important could be summarized under "manners." They stress the need to do things nicely, not eating raw meat, etc. They are not yet willing to accept other, apparently more primitive, modes as legitimate or valuable.

Further, there is a certain reluctance to admit that man has urges. This relates to the "good manners" that these fifth-graders emphasize; urges, to them, clearly mean eliminative functions, sexual behavior, etc., and they find it difficult to accept bodily functions as part of their budding definitions of what man is, what is human.

Int: Do you feel any urges?

Pat: No.

Vicky: Man doesn't get urges.

Pat: You can talk all you want, but I don't get no urges.

Vicky: Man doesn't have urges, he has desires.

There is a touching concern on the part of youngsters in a group interview about the economic condition of the Netsilik. In a film they viewed, the Eskimos looked very woebegone and poverty stricken to the youngsters, who want to help in some way.

> They had the film in color, and they had the men and the women just sitting up there, with yellow skin, black hair, and a whole bunch of raggedy clothes. It made them look queer, so that you want to go to there and help them some, the way they lived in the film...

Climate of Learning:

1. We find high awareness of the responsiveness of other classmates to the material. There are some negative reactions; youngsters in this group often mention the "stupid questions" others ask, or the confusion of classmates about concepts, e.g. "Some of the kids keep pointing to the wrong structure of this and that." One child clearly makes the point that he understands the difference between "good" questions and "stupid" questions, but that he doesn't feel that the teacher makes this discrimination; also, that he understands the difference between a valid answer and an irrelevant or off-target answer.

In the positive, there is further corroboration that children of this age, if given the opportunity, seek to share with and help one another. A 5A boy commented in reply to the question, "What do you like best in this course?"

> To help other people in it. I like working with other people and helping them and having them help me and figuring out the answers together.

In interviews, we found that these children have important conversations about the material, respond to and listen to each other, build on what each is saying. They have a great deal of energy, and a great desire to learn and master material.

2. There is general criticism of the pacing of the course. The teacher mentioned several times during observer visits that the youngsters could not progress as fast as he would like because they did not understand the materials as well as they thought they did. Yet the youngsters themselves were more critical of the pacing of the course than of any other aspect of it:

> And our teacher, he takes all day and all night to get about two pages ... he teaches so slow ... we don't pay attention, cause it takes too long.

In fact, one child notes that he prefers the films, because:

> When we get the books, the teacher takes a long time to go to one certain picture, because he'd be reading in his notes, and then he takes his time to go to another page.

In this case, there is criticism of the teacher's seeming lack of preparation. The youngsters at times seem extremely critical of the teacher, of booklets, pictures, etc.; yet viewed in context, this seems to indicate their lively intelligence and desire for achievement -- they want to be challenged.

3. These children are inquisitive and their questions are serious and

important to them. One child views the films as a triggering mechanism -- as an inciter of provocative questions the class can consider. The pace of the class seems often tedious for many of the youngsters, since the teacher forces much repetition of material. Films break up this slow pace.

> ...when we have movies instead of doing the book, people ask strange* questions that aren't even near the stuff that's in the book. See, the more we ask questions that are near the stuff in the books, people ask dumb questions.
> (*Strange in this context meaning fascinating.)

4. The children chaff under too much discussion and seek more active, project-focussed activity. "It's just talking" is a criticism they make when class sessions have been exclusively discussion. They look forward to more experimental activities.

> The teacher said he's going to try to get some herring gull eggs so that we can hatch them. Then there'll be something (to do) with it... We should have like experiments to do, like plastic baboons, and make sounds and things like that. We should have experiments to do.

They want more active involvement, and when they are given film loops to work with later in the course, they are ecstatic about the opportunity to search out data for themselves, to use the little projectors -- in short, to engage in motor-minded activities that permit manipulation of both ideas and equipment. They also seek more opportunity for independent work, away from the control and direction of the teacher:

> ...everytime he gets up there, everytime he starts talking about a book, and he's talking about it and talking about it and talking about it. But with the loops, you just get the machine and you can look at it straight without nobody interrupting.

Another girl comments on the loosening up of the teacher's control as the course goes into late spring:

> Now I like the course. Before, the teacher used to always give us the answers. Now we have to find it out for ourselves in the book. By figuring out an answer yourself, you learn more. When the teacher tells you all the answers, you don't hardly know, because you forget.

5D Interviews

Content:

1. These youngsters did not get beyond the Man and Other Animals Unit. Special problems of understanding the material are most apparent in this group.

> When I first started out, I didn't like it too well, but when I get used to it, I like it ... I didn't understand it.

The feelings of these youngsters are poignantly revealed in one girl's comments about how she would like to be in school:

> I like to be perfect in things. When someone aske you a question about something, you just come out and say it.

Other examples of the comprehension problem include:

> There are hard words ... My teacher, he ask me to sound out the word, but I don't know how to sound out.
>
> Well, I don't understand what they sometimes say. They say like what the fish does, and I don't understand when they say like ... a fish is born, then what happens -- I don't understand what they say.

This child finds even the movies hard to understand, and of the booklets he adds:

> I don't understand some of those words.

In essence, there is a difficult problem of verbal comprehension in this track, and the readings are hard and troublesome for the youngsters. Coupled with the teacher's forbidding of book browsing (described in point 1 under climate, below) the reading and vocabulary level present a high hurdle for those youngsters.

2. The A and C groups are much more focussed on the material during the interviews; the D group proliferates more randomly. This is in keeping with comments that many educational critics and researchers have made, that one requirement for success in school is focus: the ability to cut out of the field any material that is extraneous according to the rules established in the school setting.

3. As the year progresses, however, we find mastery developing in the use of the vocabulary, particularly as a tool for building ideas.

Int: Did you study structure and function?

All: Yeah.

Bud: It's the way something is built.

Jerry: A chair is made to lock a door sometimes; sometimes it's to sit down.

Hannah: Sometimes it's made to fight a lion.

Int: What's the difference between structure and function?

Bud: Structure is the way something is built, and the function...

Jerry: Is the way it serves a purpose.

Int: Why do some baby herring gulls live, and some don't?

Bud: Cause some baby herring gulls goes onto another herring gull's territory, and the other herring gulls attack the baby herring gulls.

Int: Why do some baby herring gulls die, and some don't?

Jerry: When they come out of the egg, they be wet, and then they stay out a little too long, they going to die.

Bud: And if the mother herring gull doesn't come out and sit on them, then they'll die. And when the female herring gull sits on the baby after it's hatched, it gives him enough time to dry hisself.

Int: Why else might they die?

Hannah: If they don't have nothing to eat.

Int: How do they get food?

Hannah: They peck on their mother's red spot... Then she coughs -- not coughs, she throws it up, and then the baby eats it.

4. There is more mixture of the materials with myths they have heard outside the school than we find in suburban settings, where logic, scientific attitude, and critical thinking have been inculcated from the first years of schooling.

> My friend said that if you cut a bird's tongue, they can talk ... and he said that if you cut a dog's tongue, it can talk to you instead of barking.

5. The films are very special for most of these youngsters, who say:

> I think everything should be put in film, because then maybe the kids will understand more better ... like how the salmon reproduce and everything ... Every time we learn about something new, we should have a movie.

Another boy, who found the course interesting because "there's always something doing," mentioned "They show us movies about animals and stuff" as the especially interesting part of the course. Another child, who found the verbal comprehension particularly difficult, said: "I like that watching pictures."

Climate of Learning:

1. The working style the teacher imposes on the class does nothing to encourage reflection or to reinforce any learning:

> Sometimes I like to look at the salmon things, then he says no, cause we ain't allowed unless we using it ... sometimes when we ain't got nothing to do and some of the kids would like to ask him, "Can we look at the salmon book?" but he would say no, on account of ... everybody would want one.

This strangely punitive attitude toward children's curiosity and interest in the materials is disturbing at best, and a clear symptom of much that is wrong with center city schools. One of the children who found it hard to "sound out the word" was asked how he thought he might understand the material better:

> We wouldn't have it in drawers, and he'd let us sometimes sneak one of the books over and read it.

2. Even in this class, where so much difficulty with the materials was encountered by the youngsters, they still show a strong, independent spirit, wanting to master the problem themselves and not to be subjected to the continually dominant "teacher."

> If you ask him what one word means, then he says, "Listen, class," and then starts telling them. So if we look in our dictionary and don't say nothing to him, then he won't ever find out.

The teacher, young and in his first year of teaching, hesitated throughout the course to permit any give and take.

> Int: Do you have any class discussions in Man and Animals?
>
> Child: Not actually.
>
> Int: What usually happens in class?
>
> Child: Well, sometimes he will like tell us about them, but some of the kids start talking and stuff like that, then he won't do it.

Int: Then what will he do?

Child: Make us write.

Int: What do you write?

Child: "I will not talk in class."

Int: Does that keep anyone from talking?

Child: Yeah, but I don't like that, though.

5C Case Study

The classroom itself was furnished with desks and chairs arranged in five rows of six, with the teacher's desk positioned at the front of the room. The teacher was young, in her early twenties, and traditional in her approach to teaching. The early classroom observations indicate that her teaching style, in both MACOS and other subject areas, consisted almost entirely of posing questions which required short, factual responses. Youngsters were required to rise from their seats when responding to questions, and they directed their responses to the teacher. They were not encouraged to ask questions. Over the course of the school year, however, her pedagogical approach began to show very slight signs of change. This change will be discussed later in this report.

From an analysis of the interviews, it would appear that the teacher exercised a considerable amount of control over classroom discussion in her use of the Man and Animals booklets. By reading the material to the class, she was effectively able to determine the rate at which they progressed, and through selective recognition of the children's raised hands, she was able to control the nature and extent of discussions. It also seems fairly clear that she was unresponsive to the learning process through which the children were trying to understand the material.

(Do you think you spend a lot of time talking in class -- do you spend a lot of time reading, or listening, or what?

T: We spend a lot of time listening at the teacher, because most of the time she reads. But sometimes she lets us read, but most of the time she reads, and we have to read along with her silently on the page.

(I see. The teacher reads it to you.)

A: Yes, and sometimes we read it. We close the book, and we start talking about a lot of things. And she puts more things into our mind, and we can give her better ... /answers/ ...

(What about learned behavior?)

T: We didn't learn that yet.

B: I think we went past it. That's because ... /the teacher/ ... she always talks too fast. We don't even get to hear what she says.

(Do you raise your hand to tell her?)

B: Yuh. Then she says to put your hand down and wait until she finishes reading. But then when she reads, she reads so fast, then when I go to ask her what did she say, she says, "Raise your hand." Then I forget after she says, "Raise your hand," because she goes on and on to the next page.

Confronted with this type of learning situation, the children's main reaction was to learn the correct responses by anticipating the teacher's questions in such a manner as to have the (usually) factual answers at their fingertips. To put it in the interviewees' own words:

B: You have all these kinds of books in your desk, and in your spare time, you can just take them out and read them, and I look at them over again, and then you'll be ahead of the class, and when the teacher asks you a question, you'll know 'em.

The children's rote responses were reinforced by a blatant systen of punishment utilized by the teacher. This method of punishment not only suppressed spontaneity, but also discouraged the children's contribution of their outside experiences to classroom discussion. In an attempt to please the teacher, the children reacted in conformity to her expectations, and went so far as to criticize openly the attempts of other youngsters to relate their extra-curricular experiences to school work:

(What about the girl at the back of the room?) /She was obviously isolated from the rest of the class during my visit./

B: She's the one who asks the stupid questions.

T: She said, like, when we were studying Man and Animals, she says, "Can we talk about The Birds?" because they seen the movie Saturday night. /Alfred Hitchcock's The Birds/

B: And they were herring gulls, they were mad herring gulls and crows ...

(Do you ever sit and talk to each other -- all the boys and girls, and the teacher too -- just all sitting and talking?)

B: No. Sometimes the teacher, she was going to let us talk about The Birds, but we were bad.

T: Some of the people were bad, because they were already talking about The Birds when she was reading, so we had to write one hundred times, "Listen to the directions and do not talk."

And in a slightly different vein ...

(Do you all read the same book?)

T: Yes.

(At the same time?)

B and T: Yes.

T: We don't read it. The teacher reads it -- on the herring gull. We read it a little. We read along with her, but in our minds, not out loud.

(Do you like doing that?)

T: Yes, cause I don't want to interrupt her, cause she gets mad at you.

(Does she get mad if you ask her questions?)

T: No, you don't ask her questions while she's reading. After she reads. When she's reading, she gets mad.

The demand for acceptable factual, or non-spontaneous, responses by the teacher resulted in the withdrawal of some children from classroom participation. Interestingly enough, these children were admired by their classmates for their successful withdrawal, as can be seen in the following excerpt:

(Do you think the whole class understands Man and Animals, or do you think they are confused about some of it?)

T: Some of them are confused.

B: Like Paul and Sandy -- they talk too much, and they're always asking stupid questions.

T: I know. Paul tries to be funny.

(Who are the smartest kids in the class?)

T: I don't know. The teacher knows. Joan, last time, she almost made the honor roll.

T: Tom don't ask that many questions. Tom is pretty smart.

B: He's pretty smart, but he keeps his mouth shut.

T: Rita.

B: She's real smart. She don't say nothing ...

In view of all the above, it is not surprising that one boy stated that the hardest thing for him in class is expressing his ideas to the teacher:

(What do you spend your most time doing in class?)

Read.

(Do you do a lot of listening in class, or do you do a lot of talking, too?)

Listening.

(What do you think is the hardest thing you have to do when you're studying?)

Tell him what it's all about.

(Tell who?)

Tell the people.

(You find it hard for you and your classmates to tell the teacher? Is that what you mean?)

She tells us we have to raise our hand.

Keeping the general climate of the classroom in mind, let us consider some of the concepts stressed in the course and see how these children fared. The concept of the life cycle was the easiest for the children to understand. All interviewed youngsters were able to define life cycle and to give an example of it. The children's responses ranged from very rote descriptions, by the slowest children, to responses bordering on the abstract by those children of average ability. The simplest explanation was: "Birth, Growth, Reproduction, and Death." The explanation given by the children in the group interview was broader:

(What do we mean when we talk about life cycles?)

T: How they live. How they live all through their life. It means how they reproduce and how they grow up, how they act, and how they die. They die and keep having children. It's they're never extinct.

(What's the life cycle of the herring gull?)

B: The real important thing is that he reproduces and he survives.

T: Yuh, he reproduces, and the way he acts.

B: His behavior.

(Do you think that the life cycle of the herring gull is like the life cycle of the salmon?)

B and T: No.

T: Herring gulls, the male comes out, and from the tail -- he gets on top of the female, and then from the tail they put in the sperm; and then on the salmon, after the female lays the egg, he just comes up and shakes.

B: In the herring gull, the mother it just sits on the egg, and the salmons don't. It just leaves it there. Then after the salmon reproduce, they die. They're hungry and tired. They turn white, and they die.

T: The herring gull babies depend on the mother, and the salmon babies don't.

(That's a big difference.)

T: Biggest difference of all, I think.

It is also apparent that the notion of structure and function was fairly easy for the children to understand. All the children who were interviewed (except for one who was the slowest learner and who had a considerable absentee record) were able to describe a structure and its function. The children's widespread success in being able to define and explain life cycles and structure-function would appear to be partially a result of the rote nature of their learning process, which is very conducive to answers which require a consecutive delineation of facts.

The concept of natural selection, on the other hand, was very difficult for the children to grasp. This topic, which is more abstract in nature, was not covered extensively in class. Here again, the children who were interviewed were fairly successful in handling the less abstract aspects of the topic, and could give traditional examples of adaptation, such as the rabbit who is white in winter and brown in summer -- but they did not really comprehend the process of natural selection to any appreciable degree.

Although the concept of natural selection is indeed a very difficult one to understand (and it can be argued that it is too difficult for these fifth-graders to comprehend), it would seem that the children were further handicapped in their efforts to better understand the material by the rote learning approach, with its disregard for abstracting from specific facts. Since classroom question and answer sessions were extremely limited and were centered rigidly on the factual information provided in the Man and Animals material, it is not surprising that the scope of the children's responses would be correspondingly limited in range.

The children had similar difficulties when they considered the concepts of innate and learned behavior. Here again, they were able to understand certain basic facts about behavior and repeat those examples of both learned and innate behavior which had been covered in class, but as soon as they considered examples beyond those specifically covered in class, their discussion became fragmented, and they retreated to using examples provided in the written materials, rather than continuing with an exploration of new possibilities. As an example of learned behavior, one boy said:

> Your mother teaches you ... Your mother taught you how to talk, didn't she?

When the other children started arguing with him on this point, he found it hard to defend his position. He dropped his original line of attack and resorted to the booklets for a more familiar answer to the question under discussion ("What is learned behavior?") and related the story about the cactus:

> Remember in that book, it said innate behavior and learned behavior, like when you pinch your nose on a cactus, then you don't go after that anymore, because you learn it will hurt you.

The interviewed children's lack of opportunity to participate in group discussions in the classroom was reflected in the way in which they expressed their ideas. Instead of directing their statements to each other, they usually expressed their ideas specifically to the interviewer. The lack of skill which these youngsters exhibited during the group discussions is relatively easy to understand, in light of the classroom procedure instituted by the teacher. Essentially, it consisted of the teacher posing a question, with a student responding directly to her question, rather than a free student-to-student type of interaction. They therefore lacked all opportunity to develop those skills which are requisite to good discussion.

In general, the children were not consciously aware of the purpose of the course, and only the better students were able to articulate the reasons for studying the unit.

> We're studying about man, but we're studying more about animals.
>
> We're trying to find out what's different between man and animals.

The reason for this might be partially that these children (and perhaps most children of this age level) did not seem to think about their activities in terms of long ranges of time; they were much more geared to thinking in terms of the present and the immediate past. They tended, therefore, to consider the course in bits and pieces, rather than as a total entity. In general, they understood the purpose of the course to be the provision of new information about animals, a topic which is apparently fascinating for children in this age group. For these children, a typical response to the question "Why are you studying about Man and Animals?" was: "So that if we find animals, we can take care of them."

For some of the students who were interviewed, however, the course was meaningful in that it stimulated them to consider various aspects of their own lives from a new vantage point. This was particularly true in their discussions about reproduction, as is evidenced in the following quotation, in which some really earnest thinking was taking place:

> T: So when the mother herring gull's on the bottom, the father herring gull's up on the top, and the father herring gull gets up on top, like, and then he lets some sperm go through, and it goes to the egg. And then the eggs are all ready to hatch, since they got, you know, fertilized. But then ...
>
> B: People, human beings, that's different, because a man, he don't have a baby. And a lady is the one that has the baby, and it's different between man, because the man, he don't fertilize the baby. And he don't hatch him. And the father herring gull, he hatches them. And he fertilizes them. But I can't understand how come they have to fertilize them, and a man don't fertilize them.
>
> T: He does fertilize them. The man puts the sperm down into the mother, and then the mother, and then it goes into the mother, and the mother goes ...
>
> B: But how come it don't happen to human beings?
>
> (It does.)
>
> T: Uh-huh. I know how. My father told me. /giggles from R and T/
>
> B: What are you laughing about?

The children also began to be aware of the differences between man and other animals:

(So you see that in some ways man is like an animal -- that he eats, and what else?)

B: He drinks.

T: He grows. They communicate.

(Animals communicate, or man?)

A: Both.

T: Man and animals.

(Do they both do it in the same ways?)

A, T, B: No.

B: They do it in different ways.

T: Don't you know that they don't do it in the same ways?

(Well, I'm asking you. You tell me.)

A, T, B: No. They don't do it in the same way.

(Why not?)

B: Yes, they do do it in the same way.

T: No, they don't do it in the same way. They don't go "Grrrr."

B: But both of them do communicate.

(They do? Do they tell each other things?)

Yup.

(Do they communicate the way we communicate?)

A, T, B: No.

(What's the difference?)

B: They have -- like they don't have a brain.

A: They have brains.

B: I mean ...

T: They don't talk to us.

One child expressed her own interpretation of animal behavior, which emphasized human qualities. This happened again and again, even to the extent that she denied at one point that the information provided in the written materials was accurate:

T: Do they /herring gulls/ recognize each other?

B: They recognize ... They don't recognize each other, because if the bigger one is -- like if one's smaller and one's big, the big one might fight him because that little one ... If he don't crouch down. If he don't get an urge to crouch down ...

A: They'll fight.

B: No, sir! /Notice how she switches her argument here./

A: Yes, they will.

B: No, they won't.

(Why did you say they would?)

A: They will, because in the book ...

B: It says in the book, but in my own words, I say they won't go to fight. How come they got to crouch down? They ain't got no reason.

A: I've seen it before, when I went down to the seashore ...

This child's confusion raises an interesting question: whether children who are going through a fantasy stage in their development are able to deal effectively with the factual information and concepts which are essential to an understanding of the Man and Animals unit. For this child, the material was difficult to accept because of her vivid imagination and perhaps her strong, emotional needs at the time.

The youngsters who were interviewed on an individual basis were, in general, slightly less at ease than those in the group and demonstrated greater reluctance to criticize the materials, but as a whole, the level of critical ability of all interviewees was very low. When specifically asked for their preferences about different areas of the subject matter of the Man and Animals unit, they usually stated that everything they had studied so far was interesting. Their reason for this was that it was, in essence, new information. When pressed for more specific answers, they usually resorted to a factual description of the information in the course.

While on the one hand their hesitancy to evaluate the material might have been due to their feeling somewhat ill at ease or to their fear of displeasing or disappointing the interviewer, on the other hand it can be explained in light of their lack of experience in expressing an opinion in an academic setting. They had been "taught" to accept outrightly what they were told in class; they had been discouraged from questioning "the facts" and discouraged from participating in discussion-type activities (even at indoor recess). It was natural, therefore, for these children to be noncommittal when asked for their opinion about the subject matter chosen for them by school authorities.

However, despite the environment in which these children found themselves, they still expressed a zest for learning and an interest in the materials:

(Do you ask her a lot of questions?)

B: Yes. Before we got the second book about the salmon, we kept on asking Mr. ... , because sometimes Mr. ... comes in and talks to us about it, and we kept ... before we knew about the salmon, how they get to the water, we wanted to know why they have to go upstream where they were born, and how they get the urge to go back, and the chemicals in the water and everything. And how they crossed the stream where the waterfall splashed and everything.

(Do you find you ask a lot of questions when you study other things?)

A, T, B: Not as many.

Besides the interest in the course that this quotation reveals, it is interesting in itself, because the student has indicated that it was when a visiting teacher came that the children asked questions. This suggests that their regular teacher probably did not stimulate the children to such an extent. Indeed, classroom observation data have substantiated this view.

These children were especially eager to learn new information and felt somewhat resentful because they suspected that the material could have been covered more thoroughly:

B: She collects everybody's books, but I didn't pass mine in. I got them all in my desk, and sometime when I got free time, I take them out and do them over and over.

(Do you like to look at the books over and over? Why?)

B: Cause it's fun.

(What's fun about it?)

B: It's interesting.

(Like what?)

B: Like ... like before I didn't even know there was such a bird as a herring gull. Then all of a sudden when I ... I didn't even know ... ask somebody, and they'll tell you I didn't even know about them, and then I got the book and I looked in it. Then I found out a whole bunch of things.

T: I didn't know there was a fish called a salmon.

B: I didn't, either.

(Do you think you spent too much time reading each booklet?)

B: No.

T: Yeah, because, see, we're not even finished with one, and she's already giving us another one.

D: We should finish one before we go on to another. We're not going to learn much.

A: Soon as we're finished, too, she'll put the book back.

The children's use of the material was revealing. The written material was relatively easy for some of the students to handle. All the children made use of the written materials, although they seemed to rely more heavily on films for the information.

(Do you like to see films, talk about things, or read, draw, or write?)

A, T, B: See films.

T: Draw about it and see films.

(Why do you like to see films?)

T: Because you learn more about it than reading. You see how they act, and in reading, you just see the pictures. Like the salmon. You don't see the way he acts, how fast he goes. They're just shown in a picture, just staying there, make believe the water's flowing by.

Their preferences in films varied, but in general, they seemed to prefer films with action -- the salmon more than the herring gull. Their exposure to baboon materials was limited.

The children valued their books highly and enjoyed reading them in their spare time -- as mentioned above, one girl even talked about keeping them in her desk after the teacher had collected everyone else's. They were sensitive to the colors and quality of paper in the booklets as well:

(Is there any one booklet you like looking at better than the others?)

T: The one we got now.

B: The one we got now, there's three books in it, and it's smooth on the outside -- it's green.

T: It's got Gull Behavior Part I and Gull Behavior Book II on one part, and over here it says The Gull.

B: And it has a cover, and you put it in and close it, and it's so smooth and green, with a white herring gull.

Their enthusiasm for the materials extended beyond the classroom to their extra-curricular activities:

> B: I like to go to the Emmanuel House.
>
> (Is that the same place as Barbara goes to?)
>
> B: No, it's a nun place, and you go there and you get religious education. One time they took us on a trip. I forget lots of places' names. I think it was some kind of bird zoo. And I saw some herring gulls there. And I had some bread in my hand, you know, crumbled up bread, that was left over from my frankfurt, and so I gave it to the birds, and then after that another bird, and two baby chicks ... they were playing games. And so I asked the nun if the two babies, like if one baby chick pecked on the other baby chick, would he regurgitate food?

In all, a total of six months was spent by this class on the Man and Animals materials. The salmon and herring gull were covered intensively for approximately five months; the baboon was considered briefly for a period of only one month. The teacher may have felt that the longer the children spent on each section, the more they would learn. The length of time spent on the materials was far beyond that ever anticipated by EDC, however, and it is really questionable whether the children gained any more knowledge for having spent so much time on the unit. Because baboon behavior was not covered completely, and the Netsilik unit was never studied, it cannot be expected that these children would have the depth of understanding that would be expected of a class that had studied the course as a total entity.

Over this six month period, the teacher's pedagogical style began to show slight signs of change. The first visible sign came in the spring, with the rearrangement of student desks from rows to groups. From the children's point of view, there seemed to be little difference, if any, in the way in which their classes were conducted as a result of the change in seating plan.

In fact, they indicated a suspicion that the reason for the change was to separate some of the more talkative students from friends. They did, however, feel that being seated in groups was helpful, because in their spare time they were able to assist each other within their own particular groups.

At the close of the school year, the teacher reflected on her experience with group work, revealing her new flexibility in approach to teaching (albeit very limited on the basis of our classroom observations):

> ... I think that dividing them into groups, you have the children working more, you know, because they have their own little group, and they're part of that group and they're working more. If you take the class as a whole, you'll have some kids that don't care what's going on in the room. It is good that when you get them in groups that they can work together ...
>
> ... I know that at the beginning of the school year I had them in rows. Then I decided to put them in groups. Well, that worked out for a little while, and then they were constantly talking, talking, talking, and I just put them back in the rows again. I found that I could be more effective in rows. But when I wanted to group them, I just sort of put the rows together and cut them up into groups. I don't have them that way all the time ...

Given the environment in which the youngsters found themselves, and the basic "set" of their teacher's pedagogical style, it is quite understandable that these youngsters came away from this course with a considerable amount of factual information but with a very limited understanding of the broader concepts specific to the course. They did, however, benefit from their study of the course: They became involved in making vital comparisons between man and animals, as, for example, in the area of reproduction, and they also found themselves applying some of their new understandings to their out-of-school experiences. In addition, they had acquired a new and meaningful vocabulary, which they were using with a surprising degree of flexibility by the close of the school year.

It is quite understandable that some teachers might be reluctant to introduce a course such as MACOS in their classrooms for fear that the children's participation in games and role-playing,and other similar activities which are very much a part of MACOS, might create an uncontrollable situation in their classrooms. Our experience in this classroom with this particular teacher, whose initial approach was traditional and fairly rigid, has shown that MACOS can be used with some success in a range of inner-city classrooms, which are often considered to be difficult places in which to introduce new curricula successfully. This teacher experimented with grouping, and, having found her first attempts somewhat unsatisfactory, used a modified version, giving her class the benefit of both the more traditional pedagogical approach with which she was most comfortable and the approach suggested in the EDC course of study. Another fear has been that consideration of controversial subjects such as reproduction might not be handled by the students in a mature manner. The children in this classroom displayed a seriousness of purpose in their discussions of controversial topics and showed their ability to bring to such discussions the knowledge which they were gaining from the course.

The teacher in this instance was a very critical factor in determining the degree of success of the materials in her classroom. This experience seems to suggest that the degree to which children are successfully affected by a course of study is directly influenced by the particular teacher's interests and mode of teaching.

SECTION III

QUANTITATIVE ANALYSES OF LEARNING GAINS AND LEARNING STYLES

Testing in the Man and Other Animals Unit

In designing tests for MACOS, we kept in mind that we would have several sources of information for assessing the learning gains of youngsters. The tests, therefore, were designed specifically to measure information gains and concept mastery at a fairly difficult but quite straightforward level.

Man and Other Animals Test

Of the unit pre-post tests constructed specifically for MACOS, we judge that the test for Man and Other Animals was more successful. The 1967-68 version of the test (modified for 68-69 testing) and total sample responses follow, with some interpretation of findings. In some ways, the test was less ambitious than that constructed for the Netsilik unit in the '67 - '68 trial. It contained only objective type items, whoreas the latter test contained several open-ended questions. In conjunction with working party members, we prepared several item-types: (specific questions are included in parentheses).

1. simple information and definitions, including vocabulary (9b, 9f, 16)
2. knowledge of human and other animal behavior (5, 6, 7, 8, 9a, 9c, 9d, 9e, 9h)
3. understanding of basic concepts of the course, e.g. innate and learned behavior, adaption, variation (8, 9g, 9i, 13, 17)
4. ability to interpret simple graphs and to draw conclusions concerning the information therein (2 - 4)
5. ability to make comparisons and distinctions between man and other animals (1a - i)
6. ability to reason from information given (10, 11, 12, 14, 15)
7. ability to use evidence to predict behavior (10, 11, 12, 14, 15)

III-2

PRE TO POST TEST PERCENTAGE CHANGE
NATIONAL SAMPLE

Winter 1968

Man and Other Animals

Education Development Center

Date:______________

Name:______________________________

School:______________________________

City:______________________________

Teacher:______________________________

Sex: (Check one) ____M ____F

Grade:__________

Dear Student:

As you finish studying about man and other animals we would like you to answer some questions. Just do the best you can.

1. On the list below are 9 things that happen during the lifetime of animals. Some things happen to all animals, some things happen just to human beings, and some happen to other animals but not to human beings. In the box beside each question, write a

   1 if it is true for human beings only

   2 if it is true for some other animals only

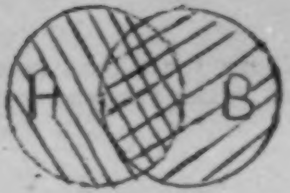
   3 if it is true for both human beings and other animals

   The first two are examples.

   ☐ breathe

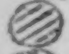
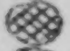
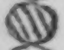
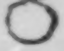
   ☐ lay eggs

Post-test % correct	% Increase Pre to Post test		
90%	+10%	1	a. marry
98%	+ 1%	3	b. eat
81%	+ 7%	2	c. grow up without adult care
76%	+21%	1	d. use a language
75%	+ 8%	3	e. cooperate with others of their kind
89%	+ 3%	3	f. protect themselves from enemies
97%	+ 2%	1	g. build fires
96%	+ 3%	1	h. tell a lie
51%	+10%	1	i. share a meal with a stranger



This diagram shows the areas in which two baboon troops live. Troop A lives in Section A. Troop B lives in Section B. Questions 2 through 5 below are about this diagram.

2. Which is the overlapping section? (Choose one answer and write its number in the box.)

1. 
2. 
3. 
4. 

89% + 7% $\boxed{2}$

3. The overlapping section is one that (Choose one answer and write its number in the box.)

1. none of the animals use

92% + 10% $\boxed{2}$

2. both groups use

4. Compared to the other two sections, the overlapping section is (Choose one answer and write its number in the box.)

1. richer in food and water

53% + 12% $\boxed{1}$

2. the same
3. poorer in food and water

5. When two troops come together (Choose one answer and write its number in the box.)

1. the larger troop would share the food and water with the smaller troop

60% + 34% $\boxed{2}$

2. the troops might be nervous
3. young baboons of the two troops would play together

6. Baboon troops never leave their home range. This is because: (Choose one answer and write its number in the box.)

1. They don't want to leave sick or old baboons too far behind.

48% + 9% [2] 2. No one is sure of the reason.

3. They don't want other animals to get the things they have built up.

4. They are able to survive only in that special area.

7. A salmon is able to find its way back to its birthplace because: (Choose one answer and write its number in the box.)

1. Some member of the group has made the trip before.

2. The parents tell the way to their young.

91% + 35% [3]

3. Each salmon remembers the smell of its river.

4. Salmon learn to do this by trial and error.

8. The group life of a baboon troop allows: (Write the number of each answer you choose in the box beside that answer. Choose as many as you wish.)

42% + 5% ☐ 1. young baboons to play organized games
32% - 33% ☐ 2. an adult to share meat with an infant
81% + 24% ☒ 3. the males to keep peace in the troop
17% - 41% ☐ 4. the males to hunt while the females gather food
42% + 1% ☒ 5. other females to help a mother with her newborn infant
85% + 5% ☒ 6. the males to protect the females and babies

9. In the box beside each question, write a 1 if it is True, a 2 if it is False and a 3 if you Don't Know.

1 = True

2 = False

3 = Don't Know

49% + 20%	$\boxed{2}$	a.	Some animals have a language like human language but we haven't understood it yet.
33% - 4%	$\boxed{1}$	b.	In many animal groups more babies die than live.
69% + 49%	$\boxed{2}$	c.	Male baboons protect their own children better than they protect other young baboons.
88% + 38%	$\boxed{2}$	d.	When a herring gull chick looks hungry, its parents feed it.
67% + 25%	$\boxed{1}$	e.	Baboons care for their young longer than herring gulls care for their young.
83% + 7%	$\boxed{1}$	f.	Human beings are animals.
79% + 9%	$\boxed{1}$	g.	When we examine how something is built, we can tell a lot about how it is used.
77% + 17%	$\boxed{2}$	h.	Whenever a gull sees sticks, it wants to build a nest.
90% + 17%	$\boxed{1}$	i.	A brown rabbit has a better chance of surviving in a dark forest than a white rabbit.

10. Look at the pictures. Then write in the box below the number of the picture showing an animal you think would not be able to live in the place shown.

85% + 3% $\boxed{2}$

11. Imagine there are no plants in the environment shown. Which of the following animals could live in that environment if there were no plants there? Write a "1" in the box beside each animal that you choose.

☐ animal 1
☐ animal 3
☐ animal 5
☐ animal 6

QUESTION OMITTED
FROM SCORING

12. If all animals like those in picture 5 died, what would happen to the animals like those in picture 3? (Write the number of your answer in the box.)

1. nothing would happen
2. the group would increase in number at first
3. they would live happily
4. they would have a bigger food supply

62% + 22% $\boxed{2}$

13. During their lifetimes, animals learn to do many things. They are able to do other things without learning. Read each sentence below. Then write a "1" in the box next to the sentence if you think it is something the animal learns or a "0" in the box if you think the animal could do that thing without learning how to do it.

Herring Gull

66% + 9% [1] a. find the edge of its territory

86% + 16% [0] b. peck at the red spot on its parent's beak

24% - 3% [0] c. fly

65% + 15% [0] d. crouch when in danger

44% + 9% [1] e. recognize its chicks by spots on the head

Baboon

40% - 6% [1] a. know the alarm calls of other animals

81% + 9% [0] b. cling to its mother's chest

71% + 2% [0] c. make sounds

64% - 10% [1] d. give special calls at special times

14. This is the skull of an animal. By examining its teeth, what would you be able to say about this animal? (Write the number of your answer in the box.)

It would be likely to defend itself by

1. fleeing from enemies

75% + 31% [1] 2. attacking and biting

It would eat

1. a lot

39% - 21% [1] 2. not much

If the weather turns very cold in a place it will

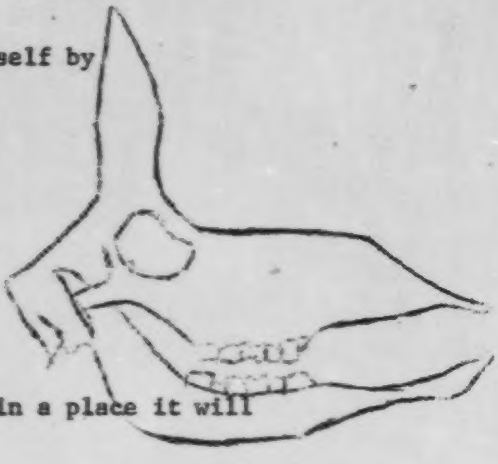
1. migrate

59% - 2% [1] 2. stay there just the same

It would be likely to

1. eat other animals

73% + 31% [2] 2. be eaten by them



Please read the five paragraphs below.

Post-test % correct	True	False	Reason	
62%	+ 7% ☒	☐	+15% 51% 8	It was early morning in Africa and the scientist Irven DeVore started out to continue his study of baboons. As he drove along, he came to an area where he saw a few trees, some low vegetation, a grassy plain and a water hole. He decided this would be a good place to stop.
64%	☐	+17% ☒	+21% 56% 9	He was looking for a new troop of baboons if he could find one, because he felt he couldn't learn much by watching the same baboons day after day.
78%	☐	+30% ☒	+33% 70% 2	"I can't tell one from the other anyway. One baboon is just like the next," he laughed to himself.
44%	☐	- 5% ☒	+ 3% 35% 6	Dr. DeVore had left his field glasses at the camp because the troops were not disturbed by him and would allow him to come very close.
81%	☐	+13% ☒	+15% 81% 9	He especially looked forward to playing with the baby baboons.

Some of the paragraphs you just read give correct information about the way a scientist would work and think. Others are not at all true.

Read the first paragraph again. If you think what it says is true, color in the box beside the paragraph under True. If you think it is false, color in the box under False. After doing this, read the numbered sentences on the right side of the page. Choose the sentence that tells why you decided the paragraph was true or false. Write the number of your reason in the box under Reason.

Do the same thing for each paragraph.

Reasons

1. Baboons are not bothered by the presence of human beings.
2. Every baboon in a troop can be identified by the way it looks and acts.
3. Baboons are never found where there are only a few trees and some low vegetation.
4. All adult baboons are so alike in appearance that we cannot tell them apart.
5. A scientist can't learn very much by watching only a small group of one type of animal.
6. To get the best observations, we should not let baboons become aware that they are being watched.
7. The baboon troop guards infants very closely and would not let a stranger get near one.
8. Troops of baboons are found in an area that provides food, water, and some trees.
9. By studying one troop of baboons very closely a scientist is able to learn a great deal about all baboons.

Word Meaning

16. In column A are some words you have read and used during this course. Please read each one. Then find in Column B the best definition for the word and write that letter in the box next to the word in Column A.

		Column A
71% + 43%	d	baboon
89% + 17%	e	structure
82% + 24%	k	reproduction
47% + 36%	g	juvenile
32% + 7%	d	human being
85% + 15%	o	life cyle
85% + 31%	b	environment
61% + 33%	a	offspring
87% + 47%	j	predator
72% + 41%	n	innate
47% + 20%	l	behavior

Column B

a. the young of any animal
b. one's surroundings
c. the opposite of animal
d. a mammal and a primate
e. the special way something is built
f. jump to one side
g. a young human or other young animal
h. a delinquent or bad teenager
i. a special way in which something is used
j. a hunter of other animals
k. giving birth to young
l. the ways an animal acts
m. a baby gorilla
n. not learned
o. the pattern of birth, having babies and dying
p. good or bad manners

POST-TEST QUESTION ONLY

17. Place a "1" next to each statement you think is true.

Percent Checking True			
	61%	1	An animal gathers information through its sense organs.
	23%		The brain receives information only from the outer environment.
	78%	1	An animal's brain receives information and sends signals to the different parts of the body.
	37%		Animals usually adapt to changes in the environment by deciding what is best for them.
	54%	1	The variety within a species is what allows an animal species to adapt to a changing environment.
	74%	1	Information from the environment is necessary for an animal's survival.
	17%		You can see and touch the signals that the brain sends to the body.

For the total matched sample of 1669 students in 13 areas*, pre to post test item results show some interesting areas of gain. Children learn a great deal of information from the Man and Other Animals unit. The way children utilize the vocabulary, and the questions and speculations they raise during interviews, reveal how directly the rich informational content of the course contributes to their growing sense of competence. A content-rich course is especially appropriate for this age-level, where capacity for processing information is enormous, and where there is insatiable curiosity about such intrinsically interesting content as animal and human behavior.

It is apparent from the evidence that where the unit deals with happenings -- descriptive aspects of behavior -- children are quicker to grasp and retain the content. Where inferential or conceptual skill is called for, children find more difficulty and fall into more confusion, as we would expect.

On over-all vocabulary competence (question 16), a 30% increase, from an average 40% to an average 70% level of knowledge, is found. Certain words that recur throughout the unit are correctly defined by over 80% of the sample (such as "structure," "reproduction," "life cyle," "environment," "predator"). On definition of "human being" small increases are shown due to test instructions. It was not made clear to students that a definition could be used more than once; thus, having used up the correct choice to define baboon, children did not have another option.

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*Brookline, Mass.; Marin County, California; Oakland, Calif.; Jefferson County, Colorado; Niles, Illinois; Webster Grove, Missouri; Orange, New Jersey; Newton, Mass.; New York City; Philadelphia; Bennington, Vermont; Washington, D.C.; West Hartford, Conn.

On correct distinction of animal and human behaviors (question 1), high levels of knowledge are shown at the beginning of the course. Even here, however, there is consistent gain.

Special problem areas prove to be those of understanding language as a peculiarly human characteristic, and of correctly identifying innate versus learned behaviors in baboons and herring gulls (question 13).

On analysis, some of the test items are considered to be open to an interpretation other than the answer expected, such as items b and c of question 14. Indeed on these poor test items, youngsters show understandable confusion. Where items of this reasoning type are clearly worded and unambiguous (a and d of question 14) very large increases in correct response are found.

One of the more difficult questions on the test was #15, in terms of both directions for answering and skills required. On the whole, youngsters do surprisingly well on this question. It is interesting to note in children's post test responses that, where they are reasoning from information essentially congruent with what they had learned in the unit (description of baboon troop range, etc.), they show good increases from pre to post test. Where they are least able to perform on the post test is on an item that calls for them to put out of mind what they have "learned" about Irven DeVore's work with baboon troops (he was so familiar to the troops that they allowed him to become a close observer) and to think of him in a new situation, with a new troop (item 4 of the question). The distinction here focuses on the new situation, and what it would entail. But most children do not read this as a new situation, and interpret it directly from their prior learning in the course, not reasoning solely from the information given on the test.

From interviews we know youngsters form a strong personal feeling for DeVore; also, the field notes are the most popular readings of the unit. From an instructional perspective, it is worth noting that such high identification with an interesting person, and such intensive exposure to his experiences, can lead at this (or any) age level to difficulty in breaking away from the mind-set so established. This factor works powerfully in reverse, however, for we have found in other curricular research in the area of racial attitude that such identification with an individual who is the focus of a narrative can exert strong influence on previously existing stereotypes and help to break down such configurations.

Media and the Message

We did not have a research design that would permit us to parcel out the specific learning gains attributable to any one medium of presentation (except for games, where a special intensive study was undertaken). We can, however, look at test results in the light of materials and methods specifically related to certain times.

In applying this method to the Man and Other Animals unit test, we find a great relationship between amount of reinforcement of an idea through various media and exercises, and the gain in learning that takes place by the end of the unit. In the few instances where learning seems to be going in a direction opposite to that desired, a close inspection of the course reveals contradictions and lack of clarity in the presentation, or no material directly related to that idea.

Question 13, on baboon behavior innate and learned, is a prime example of this problem. On two items, a and d, children give more incorrect answers at the end of the course than at the beginning. Item a was not directly covered in the material. Item d was ostensibly covered in the booklet, "Baboon Communication" but upon inspection the pages dealing with special calls revealed that both innate sounds and learned calls were discussed together, without any sorting out, and were both referred to as "automatic," a word that the children had already associated with innate behavior. The reason for confusion becomes clear. If youngsters have not worked with materials that help them to understand and interpret a question, then the results are disappointing. But the fault is ours, not the child's.

Questions 6, 7, and 8 give us further evidence from which to speculate about the effects of media and reinforcement. Question 6 is never directly handled in the materials; the gain on correct choice (2) from pre to post is only nine percent. It must be mentioned, however, that choice 4 can be seen as a reasonable selection since students could well interpret this to mean that baboons are adapted to their own and not to other environments. Together, reasonable choices account for 88 percent of the response, but the preferred choice, 2, is selected by less than half of the students.

On question 7, by contrast, the correct response increases 36 percent to over a 90 percent response on the post test. This information was treated in the salmon film, the booklet, and in the teacher material pertinent to class discussion.

On question 8, we consider three statements to be correct, choices

3, 5 and 6. Choice 6 is so popular at the beginning that little increase is possible. Choices 3 and 5 are interesting to consider, however. Choice 3 is chosen by 24 percent more students on the post test. There is information pertinent to both 3 and 6 in the booklet on the baboon troop, in the baboon troop film, and in the environment board exercise. Choice 5, by contrast, which does not increase pre to post, could be interpreted as incorrect by youngsters after viewing the young infant film, since there they see a baboon female guarding her newborn offspring from all other baboons. Perhaps our word "newborn" is misleading in this option. In any case, materials do not support the choice as a correct option.

The set of True-False items under question 9 provides further interesting data to consider. Let us look specifically at statements b, c, d and e. The first, b, is the only item showing loss on the post test. The other three are the highest gain items. Item b is a general statement calling for extrapolation from examples of specific animal cases. An exercise leading up to this concept, or a statement as such, is not included anywhere in the materials. Possibly in some classes, during discussion, the point could have been raised. We do know that evidence for specific cases was at hand: of 6000 salmon eggs, only two survive. All children know this -- it is one of those facts that become burned into memory. However, whether from wording or from level of abstraction, and given the fact that no direct expression of this idea was conveyed in the materials, the general item proves unmanageable.

The baboon booklets, films, and the environment board exercise all contain learning bearing on item c. Item d is covered in the herring gull booklet, in the film, in the slides and in class discussion. The material in item e is raised directly in work on the life cycle chart and in discussion questions following this work. In addition, the items deal with both information and comparisons explicit in the materials and specific to the animals studied.

We cannot help but be reminded of Robinson Jeffer's admonition about poetry: never let an idea sit by itself without a presence of some sort. With elementary age children, tying an idea to an example seems to be the most successful method for ensuring its discovery and retention, particularly when the example is conveyed visually, verbally, and often is part of an enactive exercise.

While it would certainly be justified to point to these findings as evidence of certain unsatisfactory test items, we think we can turn this somewhat negative view to a more positive advantage. We have considered some of our flawed items as part of a process of assessing the importance of vivid and reinforced presentation of ideas within the curriculum, to identification and retention of these ideas by students.

It is clear from this inspection that if one wants youngsters to come away from a course with correct information and mastery of certain concepts, one must carefully inspect all materials carrying these facts and ideas, to be sure that the point and perspective are not obscured by the materials and the different sources of information do not contradict one another.

Almost without exception, there seem to be explanations found in the materials themselves for the test score patterns. Largest increases on individual items occur where there is a consistent theme and where that theme is reinforced by the media of the course.

Analyses of the Man and Other Animals Unit Test Results

For purposes of statistical analysis the Man and Other Animals Unit Test was divided into two parts, a reasoning section (19 items) and an information section (46 items). To give focus to this analysis we posed several questions which were appropriate to address using statistical analysis of the basic test data.

1. Do students score better on the post-test than they do on the pre-test?

1967-1968 Data	Increase	Standard Error	t-Test	Significance Level
On the information items:	8.30	0.149	55.718	P<0.0001
On the reasoning items:	1.75	0.073	24.132	P<0.0001
On the total test:	10.05	0.173	58.161	P<0.0001

N=1646

The second year of test trials (1968-69), a revised version of the same test produced results comparable to those for 1967-1968, with an increase on information items, pre to post, of 9.8; on reasoning items of 2.0; giving a total test increase of 11.8 (N=303). The increases are larger than those of the previous year and all are highly significant. The answer to question 1, then, is that students do score significantly better on the post-test than they do on the pre-test.

The remaining analyses were made of the 67-68 data.

2. Do students differ, by the grade in which they are enrolled, in the amount of knowledge they possess about animal behavior as they begin

the course?

On Information Items:

	Mean Score	F-Test	Significance Level
4th	24.6		
5th	27.0		
6th	29.8	36.241	$P<0.001$
Ungraded	27.3		

Students do differ greatly by grade in their knowledge as determined by information items on the pre-test. Sixth graders are most knowledgeable and fourth graders least.

On Reasoning Items:

	Mean Score	F-Test	Significance Level
4th	5.44		
5th	6.12		
6th	6.78	18.591	$P<0.001$
Ungraded	7.16		

Students also differ by grade as determined by items requiring reasoning skills, though the difference is not quite as large as that found in information items. In this case the ungraded students score highest while the fourth graders are still lowest.

3. Does grade in which the student is enrolled influence the change in pre-post test scores?

On Information Items:

	Mean Difference	F-Test	Significance Level
4th	7.81		
5th	8.17		
6th	7.88	3.379	$P = .018$
Ungraded	9.71		

Fifth grade and ungraded students tend to acquire more information from the course than do 4th or 6th grade students though these differences are small (significance is in part due to the fact that the number of students is large).

On Reasoning Items:

	Mean Difference	F-Test	Significance Level
4th	1.955		
5th	1.703		
6th	1.899	1.055	P = .367
Ungraded	1.465		

There is no difference found among the students by grade level in the mastery of reasoning items.

On Total Test:

	Mean Difference	F-Test	Significance Level
4th	10.373		
5th	10.026		
6th	9.759	1.484	P = .217
Ungraded	11.141		

While learning outcomes tend to favor ungraded classes most and 6th grade classes least, the differences are not significant and would well be the function of chance.

The general conclusion that we draw is that students do differ greatly by grade in their beginning knowledge of these areas; however, the amount of learning that takes place during the Man and Other Animals Unit is by and large not associated with grade level. The one notable exception is that the ungraded and fifth grade students tend to master more of the information from the unit than do the 4th and 6th graders. This is an especially interesting finding since the unit was designed primarily with the fifth grade level in mind.

4. Is there a male-female compouent to the Man and Other Animals Unit?

Girls tend to have a slight edge on boys in their knowledge about animal behavior as the unit begins (t=1.432, P=0.152) but cannot reason any better with this information (t=.490, P approximately = 1.000). Girls as characteristic of their performance in elementary school learn, during the course, the answers to more information questions than do the boys (t = 2.234, P = 0.026) and are able to reason a little more effectively with that information (t = 1.094, P = 0.274), though not significantly so. The results of the total score change do, however, leave the girls in a stronger position than the boys (t = 2.333, P = 0.020). For a sample of this magnitude, significant differences even as large as 0.02 do not represent important differences in performance -- in fact, girls answer only one more question correctly than do the boys. These findings go against the usual trend for learning patterns in the fifth grade, where normally girls far outshine their male peers.

5. Is there a difference in the amount of knowledge students in various school systems have about animal behavior as they begin the course?

The pre-test results show that systems do differ (F value = 22.115; only 2.18 is required for .01 level of significance).

High scores came from systems in Marin County, California, Illinois, Colorado, Newton and Brookline. On the low side were classes in Washington, D.C.; New York; Oakland; Philadelphia; Bennington, Vermont; and Orange, New Jersey. The students in center city systems tend to know less about the area of human and animal behavior than students in the suburban systems.

If one looks at the system differences (see table following page), they appear to be small. This, however, can be misleading. Students in the systems with high scores answer correctly nine more items than students in the poor scoring systems. But let's give it another perspective: students would be expected to score about 28 points by guessing, so the average pre-test score of 34 points indicates that they really know, on the average, six items. Seen in this perspective, differences of nine points between systems are large; the students in some systems know almost twice as much as those in others. The differences among the systems are, interestingly, less on the reasoning items than on the information section of the text.

6. Are there differences in the improvement of students' scores by school systems?

Essentially, this question can be asked in two forms. First, we can ask whether students improve their scores (by system) more than could be expected by chance. Second, we can ask whether the scores in some systems improve more than those in other systems. Table I answers the first question. The students in all school systems improved their scores from pre- to post-test more than would have been expected by chance. In fact, for all but one of the 13 systems, the change in scores was very, very significant.

Man and Other Animals

Pre and Post Test Mean Scores by Center City and Other Systems

	Pre-Test Total Score	Post-Test Total Score	Mean Increase	Number of Students
New York	30.6	32.9	2.3	18
New Jersey (Orange)	32.5	36.3	3.8	45
California (Oakland)	31.5	43.0	11.5	137
Pennsylvania (Philadelphia)	31.7	40.5	8.8	168
Washington, D.C.	28.0	36.2	8.2	71
Massachusetts (Brookline)	35.0	48.3	13.3	35
California (Marin County)	39.2	48.3	9.1	113
Colorado (Jefferson County)	36.9	46.7	9.8	216
Illinois (Niles)	37.0	46.4	9.4	46
Missouri (Webster Groves)	36.2	43.0	6.8	46
Massachusetts (Newton)	35.9	46.6	10.8	425
Vermont (Bennington)	33.1	40.0	6.9	90
Connecticut (West Hartford)	33.4	46.2	12.8	236
Total for all systems	34.1	44.3	10.1	1646

chance score -- 28

total possible score -- 65

TABLE I

t Values for Pre- to Post-Test Score Changes on Man and Animals

	School System	t Value	Level of Significance
1.	Brookline	12.22	.0005
2.	California	14.72	.0005
3.	Colorado	22.11	.0005
4.	Illinois	9.51	.0005
5.	Missouri	7.99	.0005
6.	New Jersey	3.18	.005
7.	Newton	34.47	.0005
8.	New York	1.57	.07
9.	Oakland	19.19	.0005
10.	Philadelphia	15.38	.0005
11.	Vermont	9.24	.0005
12.	Washington, D. C.	10.91	.0005
13.	West Hartford	30.32	.0005

The improvement in scores ranged from a high of 13 points for two classes in Brookline to a low of 2 points for one class in New York.

The systems are ranked as follows:

School System	Mean Pre-Test Score	Mean Increase	N
Brookline	35.0	13.3	35
West Hartford	33.4	12.7	236
Oakland	31.5	11.9	137
Newton	35.9	10.8	425
Colorado	36.9	9.8	216
Philadelphia	31.7	9.2	168

California (Marin County)	39.2	9.0	113
Illinois	37.0	10.0	46
Washington, D.C.	28.0	8.5	71
Vermont	33.1	7.3	90
Missouri	36.2	6.7	46
New Jersey	32.5	3.7	45
New York	30.6	2.3	18
Total for all Systems	34.1	10.1	

The differences among the systems were evaluated by the analysis of variance technique ($F = 13.602$, $P < .001$). Clearly, the amount of learning that took place, as measured by the tests, differed markedly among the systems. In the total sample, post-test scores were ten points higher than pre-test. Since we previously established the fact that the average student had a base knowledge of six items over the chance score, this increase of ten points indicates that students almost doubled their knowledge of animal behavior and ecological concepts. An interesting wrinkle, however, is that these pre-post test changes across systems are smaller than the differences which were found among the systems on the pre-test. (F pre-test = 22.115; F change score = 13.602). The Man and Other Animals Unit tended to make the systems more homogeneous.

Again, using the F value as the index of evaluation, we found that the larger system differences in pre-post test scores were found in the information section of the test. The growth on the reasoning section seemed to be somewhat smaller and differed less from system to system than did that on information.

7. Is the intelligence of children related to the amount of learning that takes place in this course?

For three systems, we had no I.Q. scores; however, for the 10 systems for which I.Q. data were available, there was little relationship between I.Q. and scoring gains.

	Small Pre-Post Gain	Large Pre-Post Gain	Total
High I.Q. systems	2	3	5
Low I.Q. systems	3	2	5
Total	5	5	10

In fact, Oakland, the system with the next-to-lowest I.Q. scores, showed one of the largest gains. It is also true that the knowledge of students as they started the Man and Animals unit was independent of the growth. From other experience, we know that if the course material is relatively simple, there is a negative correlation between pre-test scores and course gain. However, for most courses, the pre-post change scores have a high positive correlation with pre-test scores. The reasons for this are quite transparent: if the student knows much of the material before he takes a course, his improvement is negligible compared with a student who knows little of the area who learns a great deal; hence, a negative correlation between pre-test achievement and course gain. Most courses are designed for the student who starts at about the 60th percentile level with the extra flourishes of materials designed to flash out the richness of the concepts rather than to serve readiness or remedial functions. If students who improve most are those who start with the most knowledge, there is a strong positive correlation between pre-test standing and gains from the course. The Man and Other Animals unit falls into neither of these categories. Dull students improved as much as bright students, and vice versa. Knowledgeable students improved as much as the ignorant, and vice versa.

We further separated the items into two more style categories: animal material and integrative items. Using the previous Reasoning and Information division, we placed all items in a four-fold table and tallied the median change score for each item domain. We found similar improvement on items with each style of content.

	Reasoning	Information
Integrative	+15%	+13%
Animal	+13%	+11%

Interestingly, the Man and Other Animals unit does not tend to favor learning in one area at the expense of another.

In summary, what has been the impact, as seen through statistical analyses, of the Man and Other Animals unit? Children did learn a significant amount of information and developed in ability to reason using the materials. Where significance does appear, there is a tendency for learning gains to be higher for fifth graders and ungraded classes than for fourth or sixth graders. The unit has neither a male nor female learning bias in its effectiveness. Among the most remarkable of the findings is that individual differences are not associated with students' intelligence or previous knowledge of the area. Clearly, those students with poor academic background, found so often in the center city, gained in learning and mastery over the ideas and concepts as much as those whose beginning positions were much stronger. On the other hand, the improvement of these students was not secured at the sacrifice of the most knowledgeable students, for their gains were equally large. And finally, the differences that were found among school systems at the beginning of the program tended to be reduced by the end of the unit.

Analyses of Netsilik Unit Test Results

1967-68

To provide some variety for the reader interested in test findings, we will present analyses of Netsilik results in a somewhat different fashion than was done for the Man and Other Animals unit. In addition to systems, I.Q. and grade level explorations, we will examine the relationships between father's education and occupation, and test achievement. Complete tabular presentations of results for the matched pre-post sample of 782 students are included for the reader's perusal.

The test devised for the 67-68 field trials consisted of four open-end items, a series of true-false items, two multiple-choice questions, and a set of statements concerning American ways of life which children had to classify as seeming either "strange" or "familiar" to the Netsilik. Because the Netsilik unit is more concerned with a life style and the total setting, we particularly wanted to give youngsters opportunity to express subjective interpretations via the open-end items.

To present basic results from testing in the Netsilik unit, several tables were created using background statistics on the children and pre and post-test scores. These tables contain a number of findings, most of which, while obvious, are of sufficient importance that we think they should be noted. The following points come from the data found in the seven pages of tables on the 1967-68 Netsilik test, and correspond approximately to the questions raised about the Man and Other Animals test results.

1. Do students score better on the post-test than they do on the pre-test, and do changes in scores differ by school system?

There was a very significant increase in the pre to post-test scores of students who studied the Netsilik unit as measured by the test. This significant improvement in scores holds true for all thirty-one sub groups into which students were classified.

The school systems[1] where the largest gains took place were Illinois, Newton, Colorado, and Philadelphia; smallest gains took place in Marin County (California), Oakland, and Vermont. One can see especially by noting the distribution of scores how consistently there was gain across the board.

2. Do students differ by grade level in the amount of knowledge they possess about Eskimos as they begin the unit, and is grade level related to learning gains?

The knowledge of 4th, 5th, 6th, and ungraded students as they began this unit was virtually identical. This differs from the pre-test results in the Man and Other Animals unit. Sixth grade students had a better grasp of primate behavior than did fifth graders, who sccred higher than did fourth graders.

While students in all grades improved significantly on the Netsilik post test, the mean increase for sixth graders was slightly larger than for the younger students. As is illustrated in several ways in this report, some of the conceptual portions of the course are more difficult for the more immature students than they are for older students. In this sense, learning gains might be expected to be associated with grade level; however, those differences for the Netsilik unit are small.

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[1] The score for Newton is so very large because of the large size of the sample. West Hartford was omitted from these analyses; since they did not complete the unit, their students took a shortened form of the post-test, making the results non-comparable.

3. Is the measured intelligence of children related to their knowledge as the unit begins and to the amount of learning that takes place?

Low I.Q.[1] students began the Netsilik unit with somewhat less knowledge than did either of the other two groups which scored identically on the pre-test. The fact that essentially no relationship exists between I.Q. and pre-test scores illustrates that the test is not simply another measure of intelligence (a frequently stated criticism of such tests).

Test gains were largest for those students of highest I.Q. and least for those of lowest. The differences in gains between the low and middle and middle and high are small (in the first case, less than half an item difference; in the second case, two-thirds of an item difference). With this substantial sample, it is true that students with high I.Q. learned more than did those of low I.Q., though the differences in absolute terms are very small.

4. Are school grade averages related to learning gains?

Students who had B averages in school started higher on the pre-test than any other group. The big gainers were the A students; they started lower than the B's and finished strong. For B and C students the learning gains were comparable. C students, interestingly, started at the level of the D's, but gained more during the semester. One cannot help but wonder if that is not the difference between C and D students, especially in grades 4-5-6.

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[1] The student I.Q. distribution was originally cut into thirds at the points cited in the table (107-, 108-118, 119+); however, from the losses that occurred during the pre-post matching (e.g. West Hartford's omission), the number in the 107- category was markedly larger than the other two. This is mentioned to explain what appears to be an odd choice of cutting points.

The test apparently does have a high ceiling which permits the A-type student to demonstrate his range of knowledge. Yet it is not so difficult that the more average student is frustrated; he is also able to demonstrate his new mastery.

5. Are parental background variables related to test achievement?

In one sense the amount of the fathers' education (a common sociological variable) does not explain these test data, for students whose fathers only went to elementary school were as a group as knowledgeable of the area when they began the unit as were those students whose fathers went to high school. Students of elementary educated fathers did not make as much progress as did those whose fathers attended high school, even though they started at the same base line. Note please the standard deviation of this group; there was much more variation in their performance than for those whose fathers had had more education. Some of these students did well, others poorly, and this range in their performance is quite noticeable.

The distribution of scores by fathers' occupation gives further information concerning background variables. Clearly the gain scores varied little; students from all backgrounds learned a significant amount. Those whose fathers were engineers or professionals did somewhat better; sales, skilled and absent fathers' children were second, followed by self-employed, clerical and unskilled.

What we have seen is a tendency for the brighter student and the student with the better educated father higher on the occupational ladder, to learn more from the course than do those students with lower I.Q.'s or from lower socio-economic backgrounds. These differences seldom are large enough to reach statistical significance. Essentially, what this is saying is that there is considerable independence of test achievement from all such variables and that individual student variation is the predominant factor in learning.

Other Test Issues:

One of the inherent problems of field testing is lack of control over the pace with which teachers use the materials. Since teachers frequently spent more than the recommended time on the Man and Other Animals unit, short shrift was often given to the Netsilik Unit. In the remaining time in the spring, some teachers moved quickly through all of the materials, some selected sections to cover at a more leisurely pace. The coverage in any case varied considerably. To determine the impact of the coverage (or lack of coverage) we extracted test data for three classes known to have completed all of the materials (N=49)[1] and a number of classes known not to have finished the unit (N=380)[1]. The distribution of pre-test scores for the two groups are very similar. At the end of the semester, both groups had made very significant improvements (t=11.21*** for finishers, 7.70*** for non-finishers); however, the group that had completed the Netsilik Unit was able to answer significantly more questions than the non-finishers (t=3.08**).

We found that the open-end items on the test were the least successful

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**significant at .01 level
***significant at .001 level

[1] Number of students with matched pre and post tests enrolled in these classes.

Netsilik Unit Test

Pre-Post Scores by Systems

Score (total possible = 43)	California (not Oakl.)		Colorado		Illinois		Newton		Oakland		Philadelphia		Vermont	
	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%
1-14	3.6	0.0	2.4	0.8	6.2	2.1	2.5	0.3	1.2	1.2	3.8	0.0	8.3	0.0
15-20	34.5	1.8	34.1	5.6	27.1	0.0	37.3	5.0	30.1	18.1	22.6	1.9	38.3	11.7
21-26	50.9	60.0	53.2	24.6	60.4	35.4	54.9	34.2	49.4	30.1	62.3	39.6	45.0	40.0
27-32	10.9	38.2	10.3	65.1	6.2	45.8	5.0	51.5	19.3	38.6	11.3	54.7	8.3	46.7
33-43	0.0	0.0	0.0	4.0	0.0	16.7	0.3	9.0	0.0	12.0	0.0	3.8	0.0	1.7
Number of Students	55		126		48		357		83		53		60	
Mean	21.7	25.4	22.0	27.4	21.9	28.1	21.3	27.2	22.5	26.8	22.2	27.3	20.8	25.2
s.d.	3.9	3.6	3.5	3.9	3.7	4.3	3.6	4.1	3.8	5.7	4.1	3.5	5.2	4.1
t	7.18***		14.1***		8.03***		24.9***		6.86***		7.47***		5.71***	

*	significant at .05 level
**	significant at .01 level
***	significant at .001 level

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Netsilik Unit Test

Pre-Post Scores by Grade

Score (total possible = 43)	Ungraded		4		5		6	
	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%
1-14	4.2	1.4	4.3	2.2	3.8	0.3	2.0	0.0
15-20	30.3	7.7	37.0	8.7	34.7	6.4	38.6	2.6
21-26	49.3	31.0	50.0	34.8	55.5	36.4	54.9	37.9
27-32	16.2	48.6	8.7	47.8	6.1	49.4	4.6	51.6
33-43	0.0	11.3	0.0	6.5	0.0	7.5	0.0	7.8
Number of Students	142		46		346		153	

Mean	21.9	27.1	21.6	26.2	21.4	26.8	21.3	27.3
s.d.	4.4	4.8	3.5	4.5	3.8	4.3	3.4	3.7
t	12.31***		6.73***		20.03***		17.7***	

* significant at .05 level
** significant at .01 level
*** significant at .001 level

Netsilik Unit Test

Pre-Post Scores by I.Q. Ranges

Score (total possible = 43	Low (Below 107)		Middle (108-118)		High (Above 118)	
	Pre%	Post%	Pre%	Post%	Pre%	Post%
1-14	6.6	0.8	0.6	0.6	1.9	0.0
15-20	43.2	10.0	31.4	1.1	25.9	0.6
21-26	45.6	44.4	56.6	30.3	62.3	24.1
27-32	4.6	37.8	11.4	58.9	9.9	63.6
33-43	0.0	6.9	0.0	9.1	0.0	11.7
Number of Students	296		214		203	
Mean	20.4	25.6	22.3	27.9	22.3	28.6
s.d.	3.8	4.5	3.6	3.8	3.8	3.6
t	16.9***		15.6***		17.8***	

* significant at .05 level
** significant at .01 level
*** significant at .001 level

Netsilik Unit Test

Pre-Post Scores by School Grade Average

Score (total possible =43)	A		B		C		D	
	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%
1-14	4.3	0.0	2.7	0.9	6.0	0.0	10.7	3.6
15-20	25.5	0.0	26.8	3.6	43.3	12.7	46.4	21.4
21-26	66.0	34.0	58.9	36.6	47.8	39.6	35.7	57.1
27-32	4.3	59.6	11.6	50.9	3.0	45.5	7.1	17.9
33-43	0.0	6.4	0.0	8.0	0.0	2.2	0.0	0.0
Number of students	47		112		134		28	
Mean	21.8	28.1	22.4	27.3	20.4	25.2	20.2	23.3
s.d.	3.9	3.3	3.8	4.0	3.8	4.2	4.1	4.3
t	9.47***		11.40***		11.91***		2.47*	

* significant at .05 level
** significant at .01 level
*** significant at .001 level

Netsilik Unit Test

Pre-Post Scores by Father's Education

Scores (total possible = 43)	College		High School		Elementary	
	Pre%	Post%	Pre%	Post%	Pre%	Post%
1-14	2.4	0.4	5.1	0.0	6.9	0.0
15-20	31.3	1.2	38.0	7.3	41.4	20.7
21-26	59.9	29.0	48.9	40.9	48.3	44.8
27-32	6.3	57.9	8.0	44.5	3.4	27.6
33-43	0.0	11.5	0.0	7.3	0.0	6.9
Number of Students	252		137		29	
Mean	21.6	28.1	21.0	26.4	20.5	24.2
s.d.	3.6	3.7	4.2	4.4	4.4	4.5
t	22.96***		12.90***		3.09**	

* significant at .05 level
** " " .01 "
*** " " .001 "

Netsilik Unit Test

Pre-Post Scores by Father's Occupation -- Page 1 of 2

Score (total possible = 43)	ABS		Unskilled Blue		Skilled		Clerical		Sales	
	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%
1-14	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	1.7	0.0
15-20	18.7	0.0	53.8	7.7	43.7	9.9	50.0	0.0	32.2	0.0
21-26	62.5	6.2	35.9	53.8	43.7	40.8	50.0	41.7	62.7	33.9
27-32	18.7	93.7	10.3	35.9	5.6	46.5	0.0	58.3	3.4	61.0
33-43	0.0	0.0	0.0	2.6	0.0	2.8	0.0	0.0	0.0	5.1
Number of students	16		39		71		12		59	
Mean	23.0	28.6	20.9	24.9	20.6	26.3	21.3	26.9	21.8	27.6
s.d.	3.7	2.3	3.3	3.5	4.2	4.2	2.8	3.8	3.3	3.1
t	6.29***		6.74***		10.19***		4.36***		11.50***	

* significant at .05 level
** significant at .01 level
*** significant at .001 level

Netsilik Unit Test

Pre-Post Scores by Father's Occupation -- Page 2 of 2

Score (total possible =43	Managerial		Self-emp.		Professional		Skild. Serv.		Eng. & Sci.	
	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%	Pre%	Post%
1-14	1.4	0.0	2.3	4.5	0.0	0.0	0.0	0.0	0.0	0.0
15-20	28.8	6.8	36.4	4.5	22.6	0.0	50.0	0.0	25.8	3.2
21-26	65.8	37.0	56.8	31.8	65.6	24.7	33.3	33.3	64.5	19.4
27-32	4.1	45.2	4.5	56.8	11.8	60.2	16.7	50.0	9.7	64.5
33-43	0.0	11.0	0.0	2.3	0.0	15.1	0.0	16.7	0.0	12.9
Number of Students	73		44		93		6		31	
mean	21.7	27.2	21.2	26.2	22.7	28.8	22.0	27.7	22.4	28.8
s.d.	3.3	4.4	3.7	4.7	3.2	3.4	3.7	5.0	3.3	3.7
t	10.33***		5.76***		14.92***		3.40*		7.83***	

* Significant at .05 level
** " " .01 "
*** " " .001 "

of any item type.[1] Children were unable to express themselves in writing with any of the richness, detail and reflectiveness they showed in the interviews; their responses on the test were essentially one word or brief phrases. Fifteen classes representing the total sample were selected for coding; pre to post-test changes were minimal, followed no pattern, and added little to our understanding of student learning in the unit. We had confirmation that children in the upper elementary grades, under the time limitations of a testing situation and given their own limits in written expression, do not convey the knowledge they actually have on written essay question, and perform much better in oral situations when the issue is one of expanding and using ideas. Consequently, these items are not included in the score results, which cover responses to objective items only.

1968-69 Test Analyses

In format, the second year's field test was somewhat different from the first year's. It contained a similar set of true-false and strange-familiar items, but excluded the open-end and multiple-choice items, and included instead a section of Semantic Differential Items and several check format options. The sample was much smaller, and not national in scope, but it did cover both urban and suburban classrooms.

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[1] The type of question asked are illustrated by two examples below:

> Let's imagine that you are going to visit a foreign land where you have never been before. You know nothing about the people there but you can speak their language. Think of 5 questions you would ask them that would help you to understand their way of life and how they think and feel.
>
> If a friend asked you, "What are the five most interesting and important things you know about Eskimos?" what would you say?

We have included the Osgood Semantic Differential[1] format in a number of the evaluation research projects and have always been somewhat disappointed with the results. Students on the pretest do represent their positions with apparent ease and this is of considerable interest; however, pre to post test changes have always been of small magnitude and frequently in surprising or disappointing directions. Two reasons for such findings would be 1) simply that the curricular experience did not make the kind of impact anticipated or 2) that the differential format was not a good method for capturing the changes that occurred. We did explore the results of a number of other research projects which had included some form of the semantic differential as one of their measuring instruments. Their results were as disappointing as were ours. In an ego-counseling project the clients regressed on scales relative to self-concept after a year of therapy; in a curriculum project on physics which had as one of its goals the revitalizing of the image of physicists as individuals, it was found that students felt that physicists as a group were older and less creative than before the materials were presented. To wit: we did not find any evidence of research where intervention was successful in making major desired changes in pre-post semantic results. The easiest hypothesis is that the human psyche is really very stable and major changes in beliefs are not easily brought about. Possibly, this very resistance, which at times seems so frustrating, has given the human species the stability necessary for survival. This discursive introduction is simply to indicate that the widely acclaimed and frequently used measuring instrument--the semantic differential--has some limitations when one is attempting to measure small and sometimes subtle changes. Such remarks are also an invitation to the reader to establish (or re-establish) a level of expectation about the findings that might be forthcoming.

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[1] For those unfamiliar with the format of the semantic differential, it is quite simple. A basic key word is given; in this case we used four different key words: ARCTIC, ESKIMO FAMILIES, COOPERATION, and AMERICAN FAMILIES. Under each of these words (or word phrases) appear ten juxtaposed adjectives, e.g. ugly -- beautiful; changing -- changeless. Students indicate their concept of the ARCTIC on these dimensions by checking one of five sections into which each adjective pair scale is divided, e.g., ugly __ __ __ __ __ beautiful. We have developed through several tryouts directions which fourth, fifth and sixth graders have little or no trouble in understanding.

The primary reason for including the semantic differential scale in the appraisal of the Netsilik Eskimo unit is that as a unit it seems to contain a large quotient of attitudinal materials. To make the contrast between man and other animals and to illustrate the commonness among men wherever they are found, the Netsilik unit contains a strong cultural component which should be reflected in the attitudes of students as much, perhaps more than, in their cognitive grasp. The reasons for the choice of the basic concepts tested thus becomes apparent: ARCTIC to determine if there develops a new level of understanding of the environment in which the Netsilik must survive; ESKIMO and AMERICAN FAMILIES to see what are the commonly perceived qualities of humanness and if the differences in response on the post-test reflect a new sensitivity; COOPERATION because it is such a basic ingredient for Netsilik survival and radiates to a total set of values which the curriculum developers hope are transmitted.

The style of the analysis is straightforward: the pre and post-test results have been examined in several forms -- means and standard deviations, and percentages of response for each of the five categories. The data have been analyzed both ways for each of the ten adjective pairs of the four key words. The sample consisted of five classes in each of two school systems, one urban and the other suburban. While a number of other separations of the data would have been interesting, e.g. males versus females, fifth graders versus sixth graders, high IQ versus low IQ, separation by learning styles, the urban versus suburban division is probably the single most provocative break. From an analytical standpoint this is also the best choice, for this gives us maximum separation between the two groups.

First we shall present the pretest position of the students from urban and suburban schools. Those items that differ significantly from a neutral position will be discussed[1], as will the differences between the patterns of the two groups. This will be followed by a discussion of the changes that took place on the post-test. The data are also presented graphically so that the reader can grasp quickly the essence of the discussion. As a rule of thumb, it should be noted that it takes about a third of a scale interval for a significant difference (actually 0.25 for the .05 level on the average and 0.35 for the .01 level) to occur.

The perception about what ESKIMO FAMILIES are is comparable for students from the center city and those from the suburb. The qualities students chose are ranked in descending order:

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[1] Significance levels cited show the strength of association with the given adjective, that is, the distance of the mean percentage response from a "0" or neutral position; hence, the more students attribute the adjective to the key word.

ESKIMO FAMILIES

Suburban	Urban
hardworking**	hardworking**
sharing**	sharing**
happy**	happy**
kind**	kind**
poor**	poor**
wise**	wise**

**significant at 1% level (see previous page)

Eskimos are a surprisingly popular subject of study in the early elementary grades; thus, many of these children might have through formal class work arrived at these attitudes. That both urban and suburban students hold comparable attitudes about Netsilik Families is provocative.

The changes that took place during the unit are reflected in the post-test results. While an inspection reveals these changes to be small, the significant changes are ranked as follows:

Pre-Post Changes

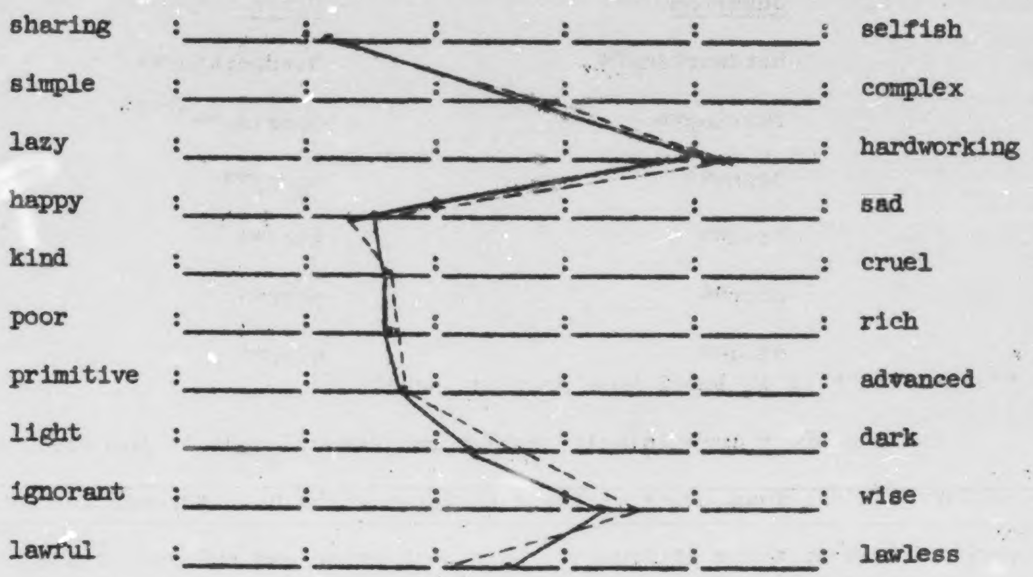
ESKIMO FAMILIES

Suburban	Urban
more	more
primitive**	lawful**
complex**	wise**
cruel**	dark**
	primitive
less	less
happy*	happy

* significant at 5% level
** significant at 1% level

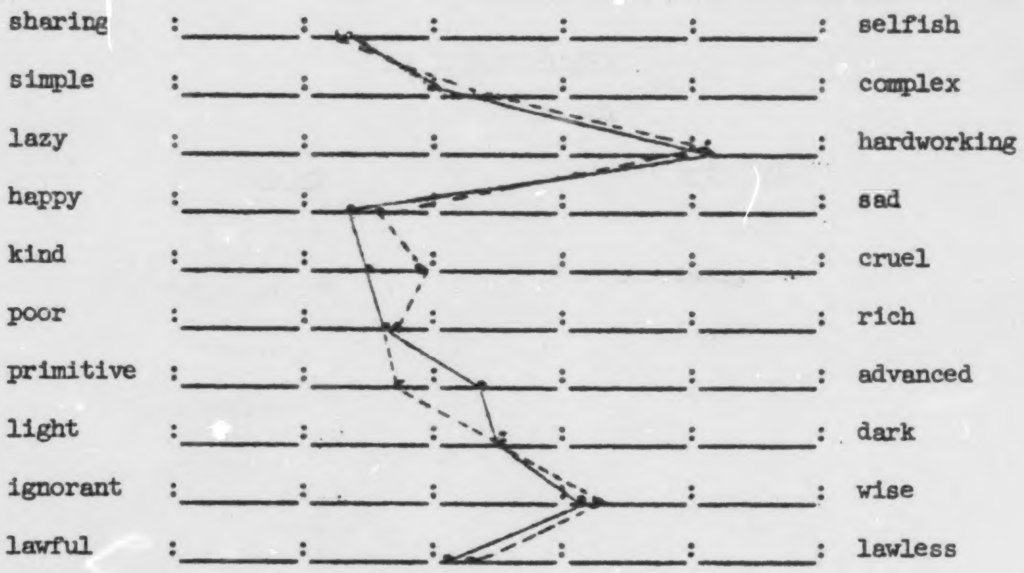
URBAN SYSTEM

ESKIMO FAMILIES



SUBURBAN SYSTEM

ESKIMO FAMILIES



Key: ____ Pre

---- Post

The only change in common for these two groups of students is toward thinking of Eskimos as more primitive and less happy; the contrast between students' daily lives and that of the Eskimos seems to produce some of this emphasis. In this sense, student changes are toward realism. While students in the suburb weighted heavily on the word "complex" and urban students on the word "wise", these both might reflect a common increase in respect for the power of mind that Eskimos brought to their problems: clever, creative solutions.

There are many instances that are presented in the materials--e.g. hunting, killing a herring gull--that might give rise to the suburban student's increased perception that Eskimos are cruel, just as there are film illustrations that Eskimos have "dark" skin as reflected in their deeply tanned faces, or that they are lawful, reflecting the natural law that determines in such large measure their social organization.

What changes might have been anticipated? An increase in the selection of the word "sharing" -- indeed -- but 54% checked the most extreme category here on the pre-test, so that was an overwhelming opinion of Eskimo life before the unit began. The students choosing this extreme category, however, increased to 56% rather than regressing toward the mean, which would have been a highly probable phenomenon.

The semantic results on AMERICAN FAMILIES, ranked in terms of the student group's deviance from mid-scale are as follows:

Suburban	Urban
lawful**	lawful**
happy**	happy**
advanced**	sharing**
sharing**	advanced**
light**	kind**
wise**	hardworking**
kind**	light**
hardworking**	wise**

* significant at 5% level
** significant at 1% level

Again a great similarity is found in the ordering of the qualities of AMERICAN FAMILIES by suburban and urban students. That the quality of lawfulness should be at the top of the list for fifth graders is difficult to interpret; does it say something about a search for order in their lives or is it a reflection of public concerns of which they have become aware? That children see the American family as reflecting happiness, sharing, kindness, and an advanced style of life, for example, is more easily comprehensible. The overwhelmingly powerful finding is that these two groups of children see American family styles as alike: the stereotype is obviously strong. The impact of the Netsilik unit on this perception of American families is similar for both groups:

Pre-Post Test Changes

AMERICAN FAMILIES

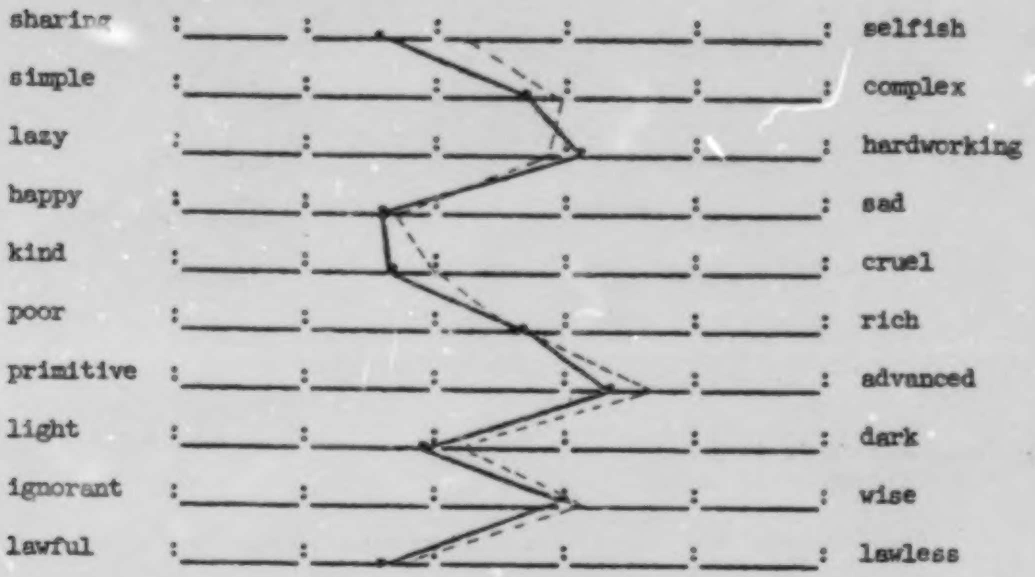
Suburban	Urban
less	less
sharing**	sharing**
happy**	hardworking**
wise*	simple*
	kind
more	more
advanced*	advanced*

*significant at 5% level
**significant at 1% level

Less "sharing" was by far the most pronounced change for students. The contrast between Netsilik and American life was so apparent that they evidently were forced to revalue the American position. The suburban children also felt that American Families were less "happy" in the post test; urban children showed the same feeling though the pre-post change was not quite significant. Possibly the viewing of frequent encounters between parents and their children, of teaching of skills and ways of life, of interaction between those of all ages, gave rise to this less glowing views of American relationships. Children also saw American Families as more advanced on the post test. The stark living conditions of Netsilik life were in contrast to the complex technology of American lives, inviting children to this view of the American family at the end of the course. It is possible to see how the attributes of less kind and wise could also have been drawn from the materials; changes on these items while significant are not large.

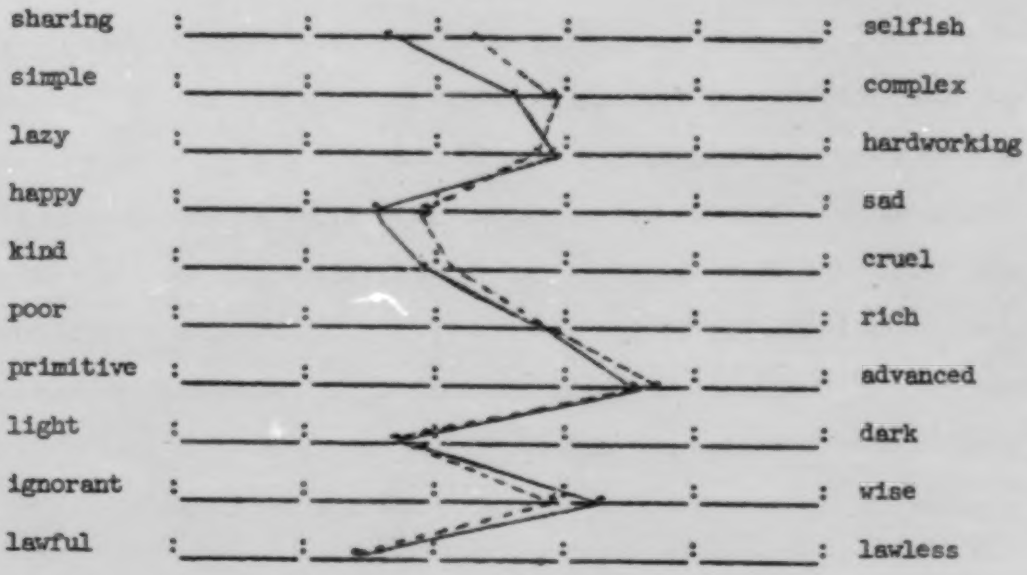
URBAN SYSTEM

AMERICAN FAMILIES



SUBURBAN SYSTEM

AMERICAN FAMILIES



Key: ____ Pre

---- Post

Without belaboring the similarities between the urban and the suburban children's perception of concepts, suffice it to say that in response to the word cooperation, the same adjectives -- together**, necessary**, good**, human** and learned** -- were given the first five rankings by both suburban and urban groups. Suburban students on the post-test increased in their choice of cooperation as being animal*, hard, alone and necessary, while urban increased on lasting*, complex, learned and together. While the changes are sufficiently small to raise questions about whether they could be replicated, we do see directions where the unit has appeared to have had an impact. Essentially cooperation is seen as a difficult problem, but solutions that can be developed are lasting. The suburban increase in the choice of "animal" is not easy to interpret for while cooperation among animals was presented, it was human cooperation that was stressed.

The final word, which actually was presented first to the students, is ARCTIC. Suburban children had more of a positive feeling toward this geographic area than did the urban children. Both groups saw it as windy, strange and wild, but the suburban groups also saw it as beautiful, inhabited and good. The changes in the scores indicated that urban students added positive qualities, e.g. livable** and explored, while suburban only modified some of their previous positions, e.g. less beautiful**, inhabited*, good*, and wild*. Urban students also showed some of these feelings by viewing the Arctic as less windy** and strange** than they thought it was before they began the course.

Is it possible to find any general trends in these results? The most basic and most important finding is that stereotyped or uninformed views

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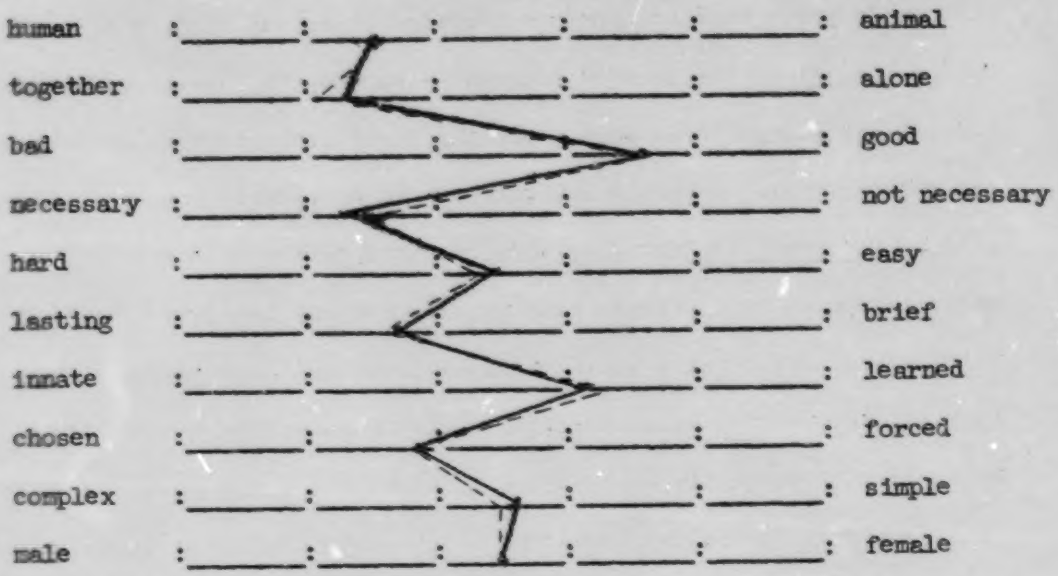
* significant at 5% level
** significant at 1% level

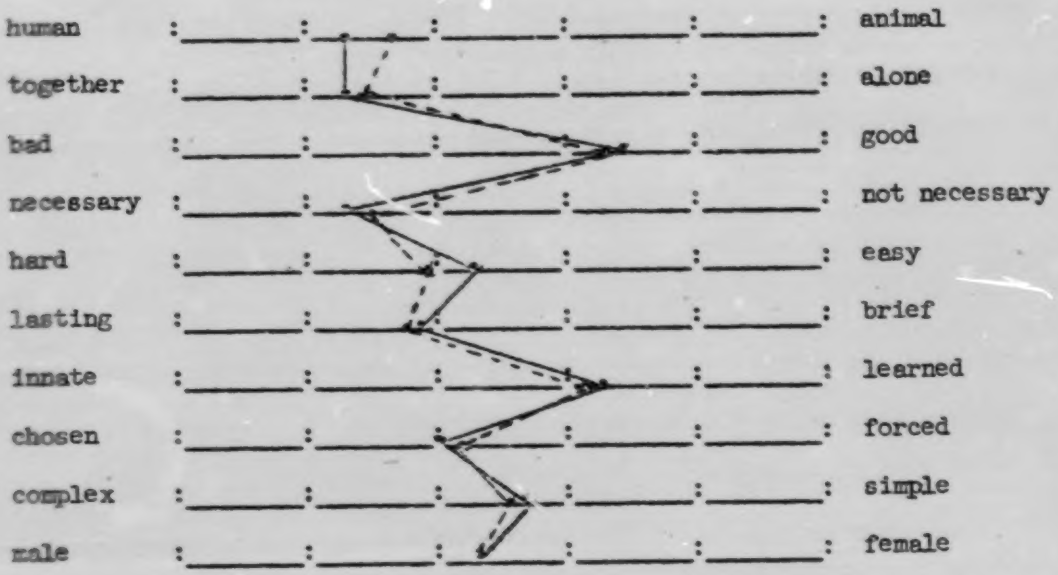
URBAN SYSTEM

COOPERATION



SUBURBAN SYSTEM

COOPERATION

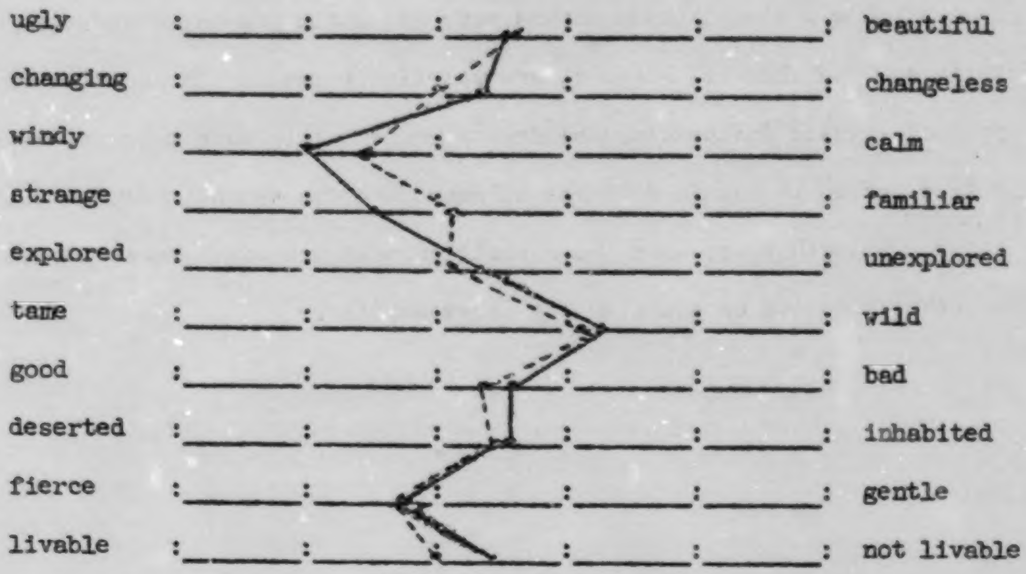


Key: ____ Pre

---- Post

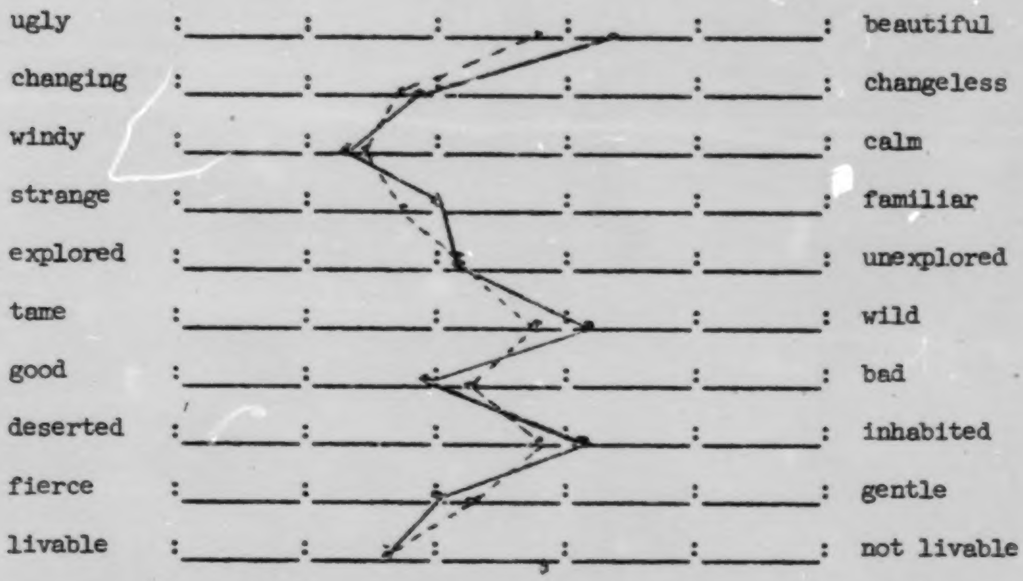
URBAN SYSTEM

ARCTIC



SUBURBAN SYSTEM

ARCTIC



Key: ____ Pre

---- Post

of both American and Netsilik families, cooperation and the Arctic, in general show a slight shift toward more realistic and informed interpretations. The changes, however, are relatively small. The curriculum experience, while influencing children's responses in some measure, does not make a marked change in patterns of answering the semantic differential items. Nevertheless, even these small changes are worth recording in light of other negative or non-findings noted earlier.

For the 68-69 sample, it is interesting to look at pre to post test changes on a few true-false type items. From the following page containing 11 items, and item statistics for the urban and suburban systems, one can see that several items showed very large gains, while several others actually showed negative change; and the items for which there were large gains or losses were the same for urban and suburban systems.

There were great gains on items 1 and 4, concerning the relative status of boys in the Netsilik society, and the purpose of magic in Netsilik life. Children also learned well that Netsilik do not have a written history or literary tradition.

There was little learning taking place on items 6, 8 and 9, concerned with commonality and uniqueness among the human species, and the sharing concept associated with seal hunting. It is especially hard to understand the lack of learning concerning seal sharing since this is equally well specified in the materials, as are the two most mastered items. It would appear that the course must bear the responsibility for this problem area, since both urban and suburban children had trouble with the question. Why students had difficulty with the particular topic we do not know; unfortunately, we have no other direct evidence on this issue.

Items six and eight were attempts to learn if children, after studying MACOS, understand that there are some basic human attributes common and unique to all men. We have evidence (as discussed further in Section IV, Conceptual Grasp and Generalization), that children do not deal with generalizations very successfully. Were such questions asked in an interview situation, and the child encouraged to give examples to support his answer,

Selected Items, Netsilik Unit Test

1968-69

		URBAN		SUBURBAN	
		Pre	Post	Pre	Post
		% Correct Response			
1.	A Netsilik Eskimo mother is just as happy when she gives birth to a girl as she is when she gives birth to a boy. (F)	24	58	13	54
2.	A Netsilik Eskimo woman must have a husband to survive, but a Netsilik man can live very well alone. (F)	32	39	42	66
3.	Through language man and other animals are able to communicate ideas to each other. (F)	38	40	55	46
4.	Using magic words and following old customs make a Netsilik Eskimo feel safe. (T)	36	81	45	81
5.	Four hunters working together at a crossing place can usually kill more caribou than four hunters working alone. (T)	44	61	49	70
6.	There are some people around the world who are not like Americans in any way. (F)	28	25	15	23
7.	If a Netsilik Eskimo were angry, he would probably sing a song. (T)	8	22	11	19
8.	Man and other animals all have beliefs. (F)	21	29	14	26
9.	If a Netsilik Eskimo is not a successful seal hunter, his family will starve. (F)	33	38	47	35
10.	Netsilik Eskimo children learn about Netsilik beliefs by reading books. (F)	57	83	57	80
11.	Netsilik Eskimos think of hunting as a sport. (F)	48	63	41	64

it is likely that out of the examples he used would come his insight that indeed all men are alike in some fundamental respects, some of which are unique to the species. But the abstract, general statements do not elicit an understanding response; we have frequently encountered this phenomenon in all work with elementary age children and we do not attribute the item six pattern to ethnocentric thinking per se.

Language as a peculiarly human achievement has always been difficult for children to accept and item three illustrates this. No matter which way the item is considered--as man talking to other animals, or other animals talking among themselves--children generally anthropomorphized to the extent that they never conceded emotionally that animals do not have a language as rich as humans do. Thus, their cognitive responses were colored by their emotional commitments.

Nine fewer percent of the suburban students answered this item correctly on the post-test while there was a corresponding increase in the "don't know" category. The urban children showed very little shift one way or the other on this item, though their initial commitment to animal language was stronger than suburban children's.

One important conceptual area where the course fails to produce significant learning is that of symbolic language as a distinctly human phenomenon, and all other evidence points to this failure.

Checklist Results

As described earlier, student checklists were designed to provide group assessments of MACOS as it functioned in the classroom: what did children interpret as the emphases in the course; what did they see as necessary for "doing well;" how did they feel they learned most; what was most difficult; where was the focus of discussion--among students, between teacher and students; what did they spend most time doing? Admittedly, results reflect children's perceptions of the rhythm of class activities and the pedagogical emphases of the course as teachers used it and thus may be somewhat distorted from actual time allocations and pattern of activities. Within the boundaries established by the questions asked, however, their perceptions do give a sense of the psychological reality of their experiences.

While observations were conducted in a limited number of classrooms, and interviewed students also comprised a very small number of the total group studying MACOS, checklist findings reflect the evaluations of thousands of students.

Results from the checklists[1] have been selected to show the most important findings from the field tests of 1967-68 and 1968-69, and to illustrate the apparent trends from these administrations. In general, we did not find differences in group responses from one year's sample to the next. The pattern of responses shown, therefore, is representative of all checklist administrations for the topics evaluated, with exceptions as described.

We were particularly interested to see if boys as a group showed different patterns of response than girls, and if urban children viewed the course differently from suburban children. Early tabulations separating children into high, middle and low ability groupings did not reveal differences in pattern of response, so these were not continued.

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[1] Complete checklist forms are exhibited in the Appendix.

Man and Other Animals Unit Checklist Results

1967-68 Total Sample = 2169
% Males = 51.0
% Females = 49.0
1968-69 Total Sample = 762
% Males = 50.4
% Females = 49.6

Two checklists were administered during the teaching of the Man and Other Animals unit. The first was given at the completion of the herring gull study, about mid-way through the unit, and the second given at the end of the baboon study. Selected results are shown below: all numbers given are percentages of student response.

Ease and Difficulty of Learning Methods:

Learning about Man and Animals is easiest when I: (Check three answers)
(Checklist I 67-68)

42 listen to the opinions of others
14 draw pictures
7 play a game
32 work in small groups
42 talk with my classmates and teacher

(This item is continued on the next page.)

29 read

76 look at pictures, slides, films

8 do written work

10 have to tell others my opinions

35 make charts, do projects [1]

These responses show the cluster of activities that promote in students the feeling of ease of learning. The visual materials are clearly paramount, with the attributes of discussion (listening and talking), group work and projects also frequently selected. However, from this question and the next we note that the verbal mode requiring expression of opinion is seen as one of the most difficult aspects of the course -- the skill of using course materials to arrive at a position is consistently viewed as a hard challenge by this age group, and as different from "talk" per se. The only activity that seems more difficult to youngsters is written work; children show a consistent pattern of expressed difficulty with the activity.

Check the three things you have found most difficult to do while studying Man and Animals: (Checklist I, 67-68)

---

[1] In all cases where multiple answers are requested, total percentages should add to 100 times the number of choices. Since students did not always check the suggested number of options, total percentages for any question frequently fall short of the possible number. In this particular case, these percentages total to 295 rather than 300.

16 listen to the opinions of others

31 draw pictures

15 play a game

21 work in small groups

19 talk with my classmates and teacher

24 read

5 look at pictures, slides, films

62 do written work

43 have to tell others my opinions

26 make charts, do projects

Sixty-two percent of students on this first checklist find it most difficult to "do written work" of any activity connected with MACOS. However, it should be noted that written work occupies a very small portion of class time. The Netsilik unit checklist findings corroborate that verbal expression requiring a substantiated opinion is a difficult MACOS task for youngsters of this age. One might have expected reading to be a particularly difficult aspect of the course; this does not seem to be the case. The success of the booklets in achieving the appropriate reading level, their subject matter, and the multiple sources of information about any one idea all contribute to their positive reception.

It is well worth noting that the difficulty level of "expressing my opinion" drops from early in the course to late in the course by a good amount, 43% so checking in this first checklist, to only 25% so selecting by the end of the Netsilik unit (see Netsilik checklist results following). As children view their own learning, expressivity and formulation of ideas in spoken form become easier for them: an important accomplishment for the course. From other perspectives--teacher and student interviews, and observations--this growth is evident. In fact, it is seen as one of the most important changes in child behavior over the course of the year; children's ability to communicate ideas effectively is mentioned frequently by teachers as a major achievement. It should be mentioned that on this question, urban and suburban groups do not show notable differences.

Preferences in Early Materials:
Of the following Man and Animals materials, check the two you liked best:
(Checklist I, 67-68)

$\boxed{66}$ salmon film
10 salmon booklets
13 herring gull slides
$\boxed{61}$ herring gull film
10 herring gull booklets
20 structure-function booklet
16 life cycle booklet

This question is included to show that whenever children are given the option of selecting reading or films as favorite formats, there is unequivocal choice of film materials. We have found this at all grade levels where honest ethnographic or documentary treatments of a topic are provided. It is important to note this because of recent evidence that youngsters in general do not favor learning by films or TV, and give as the reasons that this "cast them in the passive role and freeze out class discussion." (see Films: The Human Dimension, Section IV) We believe that it is the quality of film and its use that make the difference.

Sources of Learning:

I learned most about baboons when I: (Check one answer)

(Checklist II, 67-68)

28 read the baboon booklets
9 did projects like the environment boards
45 watched films and slides
4 listened to other students talk about the Man and Animals materials
12 listened to the teacher
8 talked in class about Man and Animals
1 wrote answers to questions
5 other (Please write in your answer:_________________________).

Almost half of the answers to this question cluster into "watching films and slides" while "reading" picks up over a quarter of the students; 73 percent select the two major modes of presenting materials as the sources of most learning. Clearly, the curricular materials of the course are viewed as the critical data sources. The exchanges between and among students and teacher are not selected as sources of learning but as other questions and the interviews suggest, as ways of consolidating or changing ideas, sharing insights, and making learning easier. The one component of the course that consistently emerges as most enjoyed, easiest to learn from, and source of most learning is the film material. The percentages above are from the 67-68 sample. Some interesting 68-69 results follow.

In 1968-69, a small control group was included in the field sample. Knowing that other social studies classes, and specifically those we observed and used as a control group (see Interviews with Teachers and Students in Control Classes, Section IV, and In the Classroom: Observations, Findings, Section V), did not use film as an integral part of their work and saw only occasional supplementary movies, early in the school year we asked the 68-69 control group[1] and the MACOS students how they learned the most in social studies.

Since we had firm evidence already that film was the most popular and important component of MACOS, we did not include the film dimension on the question below. Taking into account, then, that film would have emerged as the top priority learning mode for MACOS youngsters, what do they and non-MACOS students in public school view as "learning most" activities excluding film? (Remember, however, that this item calls for three responses, while the previous question called for one only.)

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[1] The control checklist data came from 2 urban classrooms, 4 suburban classrooms, and 3 private school classrooms.

I learn the most in (MACOS-social studies) when I: (check three answers)

(Checklist I, 68-69)

	MACOS Sample[2]		Control Sample[3]	
	urban	suburban	urban	suburban
read the book	$\boxed{66}$	$\boxed{69}$	$\boxed{60}$	$\boxed{35}$
listen to the ideas of other boys and girls	$\boxed{36}$	$\boxed{48}$	$\boxed{30}$	$\boxed{46}$
share my ideas with a small group	$\boxed{30}$	$\boxed{26}$	13	$\boxed{22}$
listen to the teacher	$\boxed{65}$	$\boxed{60}$	$\boxed{68}$	$\boxed{60}$
draw pictures or make things	$\boxed{26}$	18	9	20
give an oral report in class	10	5	17	13
write reports or stories	15	11	$\boxed{23}$	$\boxed{52}$
act things out	8	5	6	13
answer questions	19	16	$\boxed{49}$	12
solve problems	14	14	4	18
("other" category)	3	10	0	3

The pattern of responses shows some important similarities:. listening to the teacher, to the ideas of other boys and girls. and reading are selected by all youngsters as important "learning most" activities. There are, however, some areas of interesting difference between MACOS and control groups.

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[2] 41% urban
59% suburban

[3] 34% urban
66% suburban

MACOS youngsters even this early in the course are already showing the importance of group work as a learning method; the contrast between MACOS and control urban samples is particularly evident. The more active, manipulative exercises MACOS brings to the classroom as learning devices appear in the higher percentage of MACOS than of control students selecting the option "draw pictures or make things"; urban control youngsters give especially low response to this item.

Suburban students in the control sample are low on "reading" compared with all others, and extremely high on the "writing reports and stories" option. Urban control youngsters also more frequently select the latter item than do all MACOS students. MACOS teachers often mentioned that the course was one of verbal communication, with very little written expression required or used. Certainly MACOS students' perceptions of learning activities support the de-emphasis on written work.

The one sample where "answering questions" is seen as a major way to learn is the urban control group. Answering questions, reading and listening to the teacher were the three most frequently selected options and reflect the pattern of more traditional learning modes associated with center city classrooms. The impact of MACOS on center city classrooms--more active group-oriented learning--is apparent early in the course as the contrasts between urban MACOS and control samples show. That the suburban controls were high on writing (52%) and low on answering questions (12%), while the center city systems were high on answering questions (49%) and lower on writing (23%), also parallels traditional suburban and urban expectations of youngsters' abilities and needs (suburban children will need writing skills for their college and professional lives; urban youngsters cannot succeed in these difficult expressive areas, and further, discipline can be maintained better in question-answer sessions where the teacher is the center of activity.)

Obviously even in MACOS classes, the teacher does not lose his or her role as an important source of ideas and information. Children do look to the teacher as a person with more knowledge than they possess; and MACOS during the first weeks of use does not diminish this reliance.

Asking MACOS youngsters in 1968-69 a similar set of questions several weeks later in the course, and including the film item in the list of choices, we see what happens to the three most popular choices on the earlier checklist. (These can also be contrasted with single responses to the question asked the previous year.)

I learned most about baboons when I: (check three answers)
(Checklist II, 68-69)

	urban	suburban
read the baboon booklets	76	64
watched films and slides	78	87
listened to the ideas of my classmates	16	24
listened to the teacher	41	39
(Six other options)	(81)	(80)

Film is clearly the first choice of all students. Learning from reading materials, however, is increasing for both urban and suburban students, while listening to the teacher and other classmates are less frequently chosen options when the film option is available. (By the end of the 1968-69 year, only 32% of students are selecting the "teacher" options; over time, there does seem to be diminishing emphasis on the teacher's role in conveying knowledge.) Thus, the two major sources of ideas and information that are actually part of course materials are the overwhelming learning choices. When children are forced into a single dimension of response, as on the checklist of the previous year, film is by far number one, with reading the only other sizeable choice.

To reiterate, reading the booklets and watching the films are consistently cited throughout the course and across field samples as the two main sources of learning. From interviews, we have evidence that children seem to be making an important distinction about materials that carry the themes and information of the course, and activities by which one explores these materials. Essentially, interactive work seems to function as an aid in better understanding. Children realize that it is not the major mode by which information and concepts are conveyed; it is, rather, an exploratory activity where ideas are consolidated, revised or expanded through the interchange of children and teacher with each other.

Other checklist questions show that discussion is seen by the majority as both "easy" and a necessary aspect of getting good marks--in fact, the communication skills of discussion are rated as the most important component of getting "good marks" in the course. Youngsters in interviews talked of discussion as the "testing" point for exhibiting and sharing what it is that has been learned.

Class Discussion

What is your opinion about class discussions on Man and Animals?

(Check one answer)

Checklist II 67-68)

18 They are hard to understand.

77 They are easy to understand.

(Check one)

25 The teacher does most of the talking.

10 The boys and girls do most of the talking.

65 Both the teacher and the boys and girls do about the same amount of talking.

(Check one)

15 Discussions bore me.

67 Discussions are interesting.

14 Discussions are lively.

(Check one)

73 My classmates often have new and interesting things to say.

25 My classmates usually just repeat what the teacher and the booklets said.

(Check one)

84 Discussions help me to better understand what we are studying.

14 Discussions usually "mix me up".

By far the majority of youngsters feel that discussions are easy to understand, help them to understand what they are studying, that classmates have new and interesting things to say, and that the teacher and students participate about equally in these discussions.

There is evidence in these straightforward percentages to support the "Unpsyched" and "The Critics" learning styles which reflect lack of involvement in the interactive learning mode. About 1 in 6 students finds that discussions are hard to understand, boring, and "mix me up."

How Time Is Spent:

While studying about baboons the boys and girls in my class have spent most of the time: (Check two answers)

(Checklist II 68-69)

	Total	Males	Females	Urban	Suburban
reading	$\boxed{46}$	46	46	48	46
doing projects, drawing	$\boxed{35}$	34	36	43	28
writing answers to questions	6	9	4	10	5
listening to the teacher	$\boxed{25}$	26	24	18	30
talking to each other about the course	14	16	12	12	14
answering the teacher's questions	11	12	10	12	10
taking notes	9	11	7	7	10
watching films	$\boxed{48}$	44	51	48	46
other (write in your answer)	9	8	10	4	13

From the reports of youngsters in center cities, these children appear to spend considerably more time during MACOS "doing projects and drawing" than do suburban youngsters. Classroom observation suggests that discussion and small group verbal work are somewhat less frequent in the city than in the suburb. Suburban youngsters, however, see themselves spending a much larger percentage of time "listening to the teacher" than do urban youngsters. This could reflect the teacher's participation in verbal interchange, or it could indicate children's impatience with "teacher talk."

While children in both suburb and city see their classes spending similar amounts of time in reading, classroom observations indicate that center city classes actually spend more time on reading per se than do suburban ones (see Classroom Use of Reading Materials). The perceived amount of time in both cases is very large and raises, from the student point of view, the question of amount of time actually devoted to discussions and other activities. One plausible explanation for the high "reading" component that should be mentioned is that reading (that is, searching through booklets for evidence as part of small group work, returning periodically to them during a class session for further information, or confirmation of an opinion) is an integral part of many of the suggested lessons, and serves as the linking foundation for a range of activities, including discussion, rather than as a traditional reading lesson in social studies.

When we consider the amount of literature that describes center city school environments as very different from suburban classroom environments, the degree of perceived similarity among all MACOS classes could be considered a notable attribute of the functioning of the course.

Personal Response to the Course

While studying about baboons, I have been: (check three answers)

(Checklist II 68-69)

	Males	**Females**
confused	**8**	**7**
thinking a lot about baboons	**42**	**30**
bored	**14**	**9**
listening to what is being said in class	**39**	**47**
thinking a lot about human beings	**9**	**5**
talking about baboons	**20**	**21**
interested	**41**	**47**
unable to understand why we are studying about baboons	**8**	**8**
asking questions	**16**	**13**
answering the teacher's questions	**14**	**13**
learning a lot of things I never knew before	**49**	**59**
wishing we could go more slowly	**3**	**2**
wishing we could go faster	**16**	**14**

In general, checklist results show that boy-girl differences in preference for materials or learning styles are minimal. There are slight differences in personal assertiveness apparent between boys and girls. Boys express less outward attentiveness and more independent cogitation than do girls; they think a lot more about baboons, and somewhat more about humans, yet are less "interested," more "bored," listen less to what is being said

in class, and feel they learn fewer new things than do girls.

Other checklist questions show that girls feel somewhat less "important" and more "shy than boys when asking questions in MACOS; and also more girls than boys believe they have to read well, and participate in class discussions to get good grades. Conversely, boys, more often than girls, feel they must do extra projects and answer a lot of questions to get good grades.

Preferences in Reading Materials:

Which did you like the best? (Check two answers)

(Checklist II 68-69)

	Total	Males	Females	Urban	Suburban
salmon booklets	24	28	20	30	20
herring gull booklets	15	9	21	21	12
baboon booklets	52	53	51	59	49
chimpanzee booklet	48	48	48	35	55
Irven DeVore's Field Notes	30	31	28	29	31
the booklets on animal adaptation and behavior	13	13	13	13	12

Children's responses to favorite readings in the "Man and Other Animals" unit show an interesting difference in preference that seems to reflect psychological factors in learning. More than twice as many girls as boys select the herring gull booklet, whereas significantly fewer girls than boys select the salmon booklet. The salmon exemplifies in the most direct, clearly defined way the struggle for survival and the active, thrusting spirit of the life force. The herring gull materials, on the other hand, express more dependency and parenting concerns, give pictures and reading materials on infant chicks, and, in short, convey many attributes of nurturance. The differential responses of boys and girls to these two studies do carry implications for curriculum building. Current developments in psychological research indicate that the affinity for certain topics derives from deep levels of personality (male aggressive versus female conservative or receptive attributes as delineated by Erikson and others); this would suggest establishing a balance of materials that draws upon differential motivations of boys and girls. This dichotomy should not be overstressed, however; as the reading preferences show, many boys find the materials on nurturance more appealing, and many girls are fascinated by the struggle for survival.

The baboon and chimpanzee booklets are the favorite readings of both urban and suburban youngsters (with no male-female differences here), but the suburban children do not like the early animal readings as well as the later materials, while the urban children are more evenly spread in their preferences. We have found from several administrations of the checklist that the concept booklets are the least "liked" of all of the readings, and this could well be attributed to their difficulty as compared with the other readings.

The "Ideal" Classroom:

If I could have my classroom any way I wanted, I would choose: (Check one)

(Checklist I, 67-68)

21 1. all boys
17 2. all girls
62 3. both boys and girls

(Check one)

38 1. 20 or more students
62 2. less than 20 students

(Check one)

33 1. several people talking quietly
67 2. one person talking at a time

(Check one)

33 1. lots of things happening at the same time
67 2. one thing happening at a time

(Check one)

22 1. desks in rows
57 2. desks in small groups
21 3. desks in one big circle

We were particularly interested to learn what students think about the composition of the elementary classroom. This question asks children to select preferences in size, activity sequencing, room arrangement and verbal focus or diffusion. The majority prefers a classroom of both boys and girls but of less than 20 students--not especially surprising. However, somewhat more interesting is the fact that youngsters, schooled in general under a system of quiet, disciplined settings, in the majority prefer the less diverse and more focused classroom. Two-thirds express preference for one activity at a time, and for one person talking at a time. This could well be an expression of lack of experience with productive diversity in school settings, and of a perception that the teacher is happiest in the more focused situation. Interestingly, this focus of activity does not carry over to the physical arrangement of the class where 78% of the students expressed preference for desk arrangements that put them in small group clusters or in a large circle. Tying this to the previous preferences, we might also speculate that youngsters find it easier to give attention to their work in the more focused situation where the class adheres to an orderly sequencing of activities.

In school I like to work best: (Check one)
(Checklist II, 67-68)

37	in small groups
13	alone
10	with the teacher's help
29	with one friend
11	in one big group

This question also pertains to the social arrangements of the class, and we find that group work and the dyadic pattern of working with one friend are overwhelmingly preferred to solitary endeavors; and only 1 student in 10 likes to work best with the teacher's help or, at the other extreme, in one big group. Throughout this investigation into class climate and student reactions, we find evidence that youngsters seek opportunities for independence from the teacher in their work.

Responses to Open-End Questions:

Some investigators might feel that children are constrained in their opportunity to describe their own perceptions of classroom by the forced choice nature of the checklist. With this in mind, we included in all checklists open-end questions where children could express further thoughts or give suggestions. What do they do with these questions? Do they simply repeat what they have already put down in checked form? We find that the majority do not reply, but that those who do reinforce the information about the course and its materials conveyed in the rest of the checklist. Inspecting two questions from the Man and Other Animals final checklist (What did you especially like about the course so far? and Is there anything you would like to change?), we learn the following:

1. Responses to the "like" question cluster mainly into a few topics; the largest number of youngsters mentioned the baboon study (including specifically the films, and Irven DeVore's notebook). Films and slides in general were the second most frequently mentioned.

2. On the "change" question, it is worth noting that reading--amount, usually--is the most criticized aspect of the course; whenever it is mentioned, it is in criticism and generally of a "leave out" or "change" nature.

A good number of youngsters want to leave out one or more of the concept booklets.

3. Films and visuals are also mentioned on the "change" item: here the desire is consistently for "more". Where class activities are listed, the majority of suggestions are for more projects and other activities.

4. The limited choice checklist results show that reading takes up a large proportion of class time--and of this students want less. Much less class time is given to projects, and of this they say they want more. What such results seem to suggest is that youngsters respond best to paced diversity in activities, and with the exception of watching films, clearly seek variety of activities. It is also worth noting that children, when given free choice, do not seek to work more directly with the teacher in any of the traditional student-teacher modes.

Student Attitudes, MACOS and Control Classes
(1968-69 samples)

Checklist Item *	Control Classes			Mid-point, Man and Animals Unit		End, Man and Animals Unit	
	City	Suburb	Private	City	Suburb	City	Suburb
When you read something, you know it is true.	48	41	15	32	28	18	18
The best way to learn something for school is to look it up in a book.	59	56	34	58	41	41	26
My classmates often have good ideas to share.	58	74	83	72	85	74	76
I don't trust my own opinions.	20	19	25	16	14	13	13
Opinions I read in books are more important than my own ideas.	40	30	15	41	20	31	20
N	47	92	53	329	429		

* On these items, students could check "agree," "do not agree" or "can't decide" for each statement. The figures given here are percent agreeing with each item.

A group of items on the checklist concern students' feelings about sources of information and regard for their own and classmates ideas. Do MACOS students differ from control groups on these items?

Of all groups, the private school students in the control sample appear most strongly to challenge the book as the authoritative, true source (item 1). By the end of the Man and Other Animals unit, however, MACOS students in both city and suburb are equally skeptical of the absolute truth of the written word. The book per se as the authority and source of truth diminishes.

Another area where MACOS seems to make important inroads is that of best source of learning (item 2); the course modifies children's views of data sources. Suburban and city control classes heavily favor the book. As the course progresses, MACOS youngsters appear much less inclined to rely only on books.

On the third item, concerning the value of classmates' ideas, suburban and private control groups feel very much as do their MACOS peers, expressing overwhelmingly the worth of classmates ideas. Center city controls, on the other hand, show least agreement with this item. In general, the control students from the center city show less confidence in their own and classmates' ideas, and more acceptance of authoritative sources of knowledge. Why MACOS students in the suburbs show less agreement with this item as time goes on, we do not know.

Very few youngsters in any group would agree that they don't trust their own opinions (item 4). MACOS youngsters, however, display more confidence in their own ideas. Private school controls are most like MACOS students in their attitudes, as tapped by these items.

Selected Items Comparing Classroom Climates

MACOS and Control Samples:

If I had to describe my (Social Studies-MACOS) class, I would use the words:*

(Checklist I, 68-69)

	Controls		MACOS	
	Urban	Suburban	Urban	Suburban
confusing	19	10	13	11
fun	15	40	49	51
not very important	6	13	3	1
boring	15	40	3	11
my favorite subject	36	9	37	16

* (Students checked two answers from nine options)

Youngsters studying MAN: A COURSE OF STUDY more frequently than controls select social studies as "my favorite subject." An interesting dimension, not shown in the table above, is that in MACOS classes, boys and girls in almost equal numbers prefer the course to their other subjects. In control classes, boys twice as often as girls select social studies as the favorite (23% versus 12%).

In both samples, center city youngsters much more frequently than the suburban check the option "my favorite subject." In the control classes, however, four times as many city youngsters make this choice as suburban youngsters. In the MACOS classes, this gap is narrowed; in other words, MACOS seems to be making social studies more interesting for suburbanites.

The "fun" and "boring" options are interesting to note. MACOS is clearly more fun and less boring than other social studies. In the suburbs particularly, MACOS seems far less boring to children than does regular social studies. In the city, youngsters in control classes seldom use either of the "fun-boring" choices; these affective, "feeling" words are not often selected. By contrast, almost half of the city children studying MACOS select the word "fun," and only 3% select the words "boring." In other words, while social studies is a favorite subject for about equal percentages of control and MACOS classes in the city, it is not so often viewed as a pleasurable activity in control classes. This seems to reflect directly on both content and pedagogy in more traditional fifth and sixth grade work--"fun" in school is not an expectation; in fact, it is frowned upon by many teachers as distracting to learning. It is noteworthy that with the difficulty of concepts and plethora of information in the Man and Other Animals unit, the activities and materials mesh in such a way as to seem "fun," and not at all boring.

Checklist Item	Control Classes		Mid-Point, Man & Animals Unit	
Checklist I, 68-69)	City	Suburb	City	Suburb
In (Social Studies-MACOS) we work in small groups: (check one)				
often	9	21	24	25
sometimes	28	70	54	66
never	63	9	22	9
To get good marks in (Social Studies-MACOS) I have to:*				
take part in class discussion	15	47	47	68
answer a lot of the teacher's questions	23	13	14	8
remember everything the teacher says	30	23	24	17
agree with the teacher	13	3	6	3
have my own opinion	15	22	19	22
ask questions	38	44	29	42
Number of students	47	92	329	429

*Children check three items from 15 options.

The use of small group work in MACOS is clearly much greater than in control classes. In fact, 63% of urban control students say they "never" work in small groups. While MACOS youngsters in the city engage in somewhat less group work than their suburban peers (and remember, this is early in the course) the difference between urban and suburban classrooms in this activity is far less than we find within the control sample. Suburban controls are similar to suburban experimentals.

The next question brings into sharp focus the importance for achievement that children attribute to their participation in class discussion. In urban control classrooms, the emphasis is strongly on the question-answer, teacher-centered mode and little importance is given to discussion. In suburban control classrooms, the freer discussion format emerges as the most important option. We find that urban MACOS children look more like suburban children of both samples. In comparable suburban situations, the pedagogical differences contributing to students' perceptions of achievement dimensions do not appear large between MACOS and other social studies; however, there is a tendency for MACOS children to attach even more importance to class discussion and less to what the teacher says.

These data suggest some provocative conclusions. Suburban children in control classes apparently learn under a pedagogy quite similar to that of MACOS; but the content does not appear comparable in appeal and in involving students. Bruner[1] has written that curriculum is the endeavor par excellence where the line between method and content grows necessarily indistinct. Yet suburban checklist findings indicate that this happy union does not always occur. The teachers in suburban situations as evidenced both by these checklist findings and class observations, are likely to be using (before or without MACOS) a pedagogy involving interactive situations, but the content of the social studies is clearly more boring and uninteresting to large numbers of children than is MACOS, despite group work, discussion, and other pedagogical diversities.

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[1] Ibid., p. 72.

Even when school systems support the open classroom, then, this in no way guarantees that the majority of children will bring enthusiasm and motivation to learning situations. Classroom management procedures per se will not energize the American classroom. Curriculum materials have a critical role to play, and quality of content seems necessary to catch students' enthusiasm; progressive classrooms focused on student participation are not in themselves sufficient.

Further, the heartland of resistance to change--the urban center classroom--responds to curriculum-methods innovation in measurable degree; students in MACOS classes perceive their activities in a way that is comparable to the suburban schools. They respond to these changes by sharing with their suburban peers a new pleasure in social studies. How much of this enthusiasm could be classified as Hawthorne effect--children knowing they were using new materials, etc.,--is a moot point. There were, however, some interventions common to both control and experimental groups, such as observer and interviewer visits and checklist administrations, which could have served to balance for both samples some of the possible Hawthorne effects.

If we have evidence that open classrooms using small group work and discussion do not of themselves generate student interest and involvement, the next question is obvious: what about the opposite case? Does innovative, substantive content utilized in a traditional way promote the same learning as such content used in the interactive classroom? We have very little evidence to answer this question. From the control data, it appears that in city classrooms, a great amount of children's energy is put into controlling mechanisms, into not getting into trouble. Even in some MACOS classes, this is true; the city case study in Section II is evidence that MACOS classes can be conducted in a way that puts children in more withdrawn, passive and self-contained situations. We know that in such classrooms, there is very little associated learning of a socially interactive form. The emphasis is on memorization and on controlled, unexpressive, unidirectional behavior. To quote from the case study:

> The interviewed children's lack of opportunity to participate in group discussions in the classroom was reflected in the way in which they expressed their ideas. Instead of directing their statements to each other, they usually expressed their ideas specifically to the interviewer. The teacher's classroom procedures were to pose a question, with a student responding directly to her question. They therefore lacked all opportunity to develop those skills which are requisite to good discussion.

Did they gain any significant knowledge from this course? This class did acquire a new and workable vocabulary. While they were somewhat stimulated to consider various aspects of their own lives from a new vantage point--differences between humans and other animals--they came away with a very limited understanding of the broader concepts of the course, as well as with few of the social skills developed in other classrooms. In this case, of course, we have the dimension of tracking to consider; these were low-track students, homogeneously grouped, with no opportunity for interchange with more able or academically interested students.

Granting that we do not have the full and necessary range of evidence (this one traditional class observed intensively did not take the tests), we are convinced from all the data we have gathered that the real power of MAN: A COURSE OF STUDY derives from the integration of sound, exciting content and engaging pedagogy.

Checklist Findings: Two Classes with Teachers Not Attending Workshops

What happens in the classroom when a teacher uses MAN: A COURSE OF STUDY without the benefit of a seminar program? During the spring of 1968, two 5th grade teachers in a suburban Massachusetts system (System A) taught the Man and Animals unit this way. A caution: though the sample is reasonable compared to the rest of the suburban sample, it is too small to make definitive statements possible.

The two classes have been compared with those in two other suburban systems of similar, high socio-economic level (Systems B and C). These two teachers rank as very competent, and they represent distinct teaching styles -- one somewhat didactic and controlling, the other more student-centered, creative and permissive. The teachers may be considered representative of the Systems B and C samples. In terms of the school systems, System A is more traditional in approach than the two others; it is possible that these students approached MACOS with a slightly different set of skills and expectations than did other students. This potential distortion should be minimized by the fact that these two classes began using MACOS after they had been with good, experimentally-oriented teachers for half a year.

On the basis of pre-post test scores, this experiment was highly successful. Their 13.3 point mean gain was the greatest of all systems sampled. (System B increased 10.8 points and System C, 12.7 points.) While the test does not measure the total MACOS experience, it does indicate the acquisition of certain skills, concepts, and information. In this respect, it seems clear that competent teachers can teach content specifics successfully with or without seminar support. (Whether less able or strictly traditional teachers would have different test results is another question.)

A second, equally interesting result comes from the students' evaluation of what is happening in class. Although we would expect the classroom styles of all three groups to be similar -- as the students, teachers, and curriculum are similar -- we found that group A differed significantly from the other two systems on 20% of the items on the Man and Other Animals Checklist I, given after the herring gull section. (Checklist II has not been considered, because it was administered by only one of the two teachers.)

Differences appear on a number of dimensions: the nature of verbal exchange, the existing and preferred classroom organization, and the degree of interest in the course.

1. Verbal exchange -- these students find it more difficult than do System B and C children to "tell others my opinions." Fewer Group A students check this option when asked when learning is easiest; similarly, more check it as the most difficult thing to do while studying Man and Other Animals (50% vs. 41%). Also, these students are less apt to ask questions in class (7% vs. 18%). One senses that discussion skills are not as developed here as they are in the other two suburban groups and that these students are more timid in this area.

2. Classroom organization -- System A teachers' approach to MACOS is more project-oriented than in comparable school systems. (While working on this course, I have been working on projects: this group -- 36%, suburban group B -- 27%, suburban group C -- 21%.)

From our observations of these two classes and from our talks with these teachers, it appears that they have interpreted the course as structured around student projects somewhat more than EDC expected. These teachers typically approach social studies curriculum in this style. Since MACOS can be taught this way, there was little reason for teachers who were overwhelmed (by their own admission) with unfamiliar content to also change their pedagogy.

Question 6, "In school I like to work best -- in small groups, alone, with the teacher's help, with one friend, in one big group" also shows significant difference between the structure of this experience and the typical MACOS usage. Unlike typical students, who prefer to work in small groups, these youngsters rank working with a friend first. While group work and working in pairs are the first and second choices for both sub-samples, pairing is much less popular than grouping in suburban systems B and C.

	System A	System B	System C
small groups	40.5	44.4	41.2
pairs	48.9	27.4	29.4

The System A choice may occur because student projects in their classrooms involve pairs of students making charts, or drawing, etc., or it may be that group discussion is difficult for them and so they prefer to communicate on a one-to-one basis. It is interesting to note that no System A students selected "working in a whole-class group" while about 7.8% of the others did so.

3. Interest in MAN: A COURSE OF STUDY -- The checklist data here are conflicting. More children in System A describe themselves as interested in the course (61.9% vs. 50.6% and 51.3%), and they are more likely to describe themselves as "learning a lot of things I never knew before" (78.6% vs. 69.7% and 64.8%). On the other hand, they claim that the class as a whole was more bored (28.6% vs. 10.8%) than did the other systems. Also, these students indicated that they thought about the material less than did the others (11.9% vs. 20%). Perhaps the course had a more differential impact in these classes than in Systems B and C, strongly exciting some of the students while turning off others. Or the conflicting attitudes on this dimension may simply result from the small size of the A sample.

On the basis of limited data, we can say that the checklist results counteract the positive pre-post scores. The latter would suggest that teacher education does not contribute to the successful use of MACOS, but the former indicates differences between two samples in which we control for everything except workshop attendance. Whether either the checklist or the pre-post differences would hold in larger, more representative samples would be determined by further field testing of classes using the course whose teachers do not participate in seminars.

Netsilik Unit Checklist Results

The following pages present figures and interpretations for the Netsilik unit student checklist.[1] 1330 boys and girls answered this questionnaire, half of them in the fifth grade, over a quarter in the sixth grade, and the rest in fourth grade or ungraded classes. Percentage responses for boys and girls are given, with brief commentary beside each question.

In reading preference and general interest in the course, there is a tendency for girls to show the more traditionally feminine preference for poetry, fantasy, and personal relationships; however, it is only a tendency. A more important finding, perhaps, is that boys and girls show such similar preferences and styles of interpreting and enjoying this course. Seldom did average percentage differences between groups approach 10% of the samples.

There are some small but provocative differences in the learning styles, personal preferences and interpretations of classroom climate and class response to the course, given by the male and female samples. Boys appear as slightly more inquisitive, more searching for information, more questioning and more satisfied that they had understood very well Eskimos and Eskimo life. At the same time, they also have a tendency to be more negative about the class response to the course than do the girls, selecting a bit more often the words confused, bored and silly as their descriptions of their class, and seeing the class as somewhat less interested and participating less in discussions.

Preferences in learning style as related to film material are consistent and similar for both groups--overwhelming preference for films over reading, and for multiple viewings of each film:

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[1] Administered during the 1967-68 field test.

Netsilik Eskimo Unit: Student Checklist

Results and Interpretation

Question 1. If I had to describe the unit on the Netsilik Eskimos, I would use the words: (Check two)

Results:	Girls	Boys
easy	10%*	12%
confusing at times	32	27
hard	9	9
fun	54	55
interesting	83	79
boring	6	10
other (What is it?____)	7	6

Interpretation:

While over three fourths of the children found the unit "interesting," and over half found it "fun," it is also true that over a quarter found it "confusing at times." "Easy," "hard," and "boring," picked up rather small percentage responses. Perhaps the above list of adjectives could be criticized as too confining; however, only 6½% of the students chose to write in their own descriptive word. We would prefer to expand the list of choices in future usage.

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*Figures throughout are the percentages of students selecting any given item.

Question 2. Compared with the Man and Animals Unit, the Eskimo Unit is: (Check two)

	Girls	Boys
harder	17	22
more interesting	68	64
more fun	52	49
easier	15	18
more confusing	13	14
more important	20	16
other (What is it?____)	7	8

Interpretation:

On question 2, the majority of children found the Eskimo unit "more interesting" and "more fun" than the Man and Animals materials. Some of this could be a natural youthful inclination to favor the most recent experience if it has been a relatively pleasant one. However, other checklist and interview findings seem to confirm that the children who did study the Netsilik materials found them more intriguing and thought-provoking than the earlier unit. Again the explanation for this could well lie in the fact that the Man and Animals Unit had laid the groundwork for study and reflection about man as contrasted with other animals and had prepared them with a method, a vocabulary; in other words had given them a competence for studying the Eskimo materials. In addition, the emphasis on human qualities and ways of life cannot be underestimated; children perceive this emphasis as important and illuminating as they think about their own lives and families.

Questions 3 and 4

3. Since I started studying about Eskimos, I have been: (check three)

	Girls	Boys
wishing we could go faster.	42	40
wishing we could go more slowly	13	13
learning a lot of things I never knew before.	90	82
unable to understand why we are studying about Eskimos.	8	9
asking a lot of questions.	18	26
wanting more reading.	24	22
looking for extra information on my own.	20	18
wishing we wouldn't have to do so much writing.	11	19
wishing we wouldn't have to do so much reading.	21	22
answering the teacher's questions.	35	38

4. Since we began studying about the Netsilik, the boys and girls in my class have been: (check three)

asking a lot of questions.	54	55
confused.	7	12
bored	13	17
silly	22	28
interested	72	67
talking more than usual about social studies	33	31
taking part in class discussions.	60	50
wishing we could go more slowly.	4	8
wishing we could go faster.	21	23

Questions 3 and 4: Interpretation

It is always interesting to compare youngsters' interpretations of their own response to a subject with the response they attribute to their classmates Here we find that while 40% of the students wanted to move more quickly through the Eskimo materials, only 22% of the sample saw this as a desire of their class as a whole. Compared with the Man and Animals checklist, we find that the option "learning a lot of things I never knew before" is almost unanimously selected to describe feelings about this unit, a much higher percentage than earlier.

The extremely high information content of these materials is clear to youngsters. A good percentage of students (37%) saw themselves in a class situation where they were "answering the teacher's questions." On the Man and Animals checklist, only 14% of students selected this response. Whether students grew more discriminating in their evaluation of class behaviors or whether the unit is more teacher-based is hard to say from these data above. Perhaps it is simply a child's way of indicating that he or she knows enough to give response when the teacher questions, for there is really no clearly defined "time spent" dimension indicated.

Interestingly, almost a quarter of the students wanted more reading during the Netsilik Unit, and almost a quarter wanted less reading, indicating the range of abilities and interest the unit must reach. Almost 10% of the boys wanted less writing; and, almost 10% saw themselves as asking more questions but as learning fewer new things than did the girls.

Questions 5 and 6

Results:

5. So far I have learned the most about the Netsilik from: (check three)

	girls	boys
reading the booklets	44	45
seeing movies and slides	89	89
playing games in class	39	44
listening to records	27	31
taking part in small group discussions	9	11
listening to the teacher explain things.	41	35
making things such as tools.	7	9
drawing maps and pictures.	4	6
other (what is it?________)	2	2

6. While studying about the Eskimos I have liked best: (check three)

playing the games.	76	75
using problem cards.	6	5
reading the booklets.	26	25
writing reports.	6	4
watching films.	87	88
discussing things about the Eskimos.	32	32
making things such as tools.	11	13
listening to records.	35	34
drawing pictures or maps.	8	11
other (what is it?____)	3	2

Questions 5 and 6: Interpretation

Questions 5 and 6 reveal two important aspects of students' response to this unit: aspects which in students' views contribute most to learning, and aspects which were best liked. It is important to contrast these two sets of qualities, for the patterns of response reveal that students do discriminate between learning from and liking materials. Also we find that in learning styles, there are slight boy-girl differences, while in preferences, there is extremely little difference.

For both groups, the films and visual materials of the course are almost unanimously acclaimed. However, while three-fourths of both boys and girls enjoyed playing the games, only about 40% felt games had been one of three most important learning components of the course (boys were slightly higher in this choice).

We would venture that youngsters, who as a group found that "learning about the way Eskimos live and work" was the most interesting aspect of the complete Netsilik Unit (Question 19) also found that the films, records and discussions were more "complete" as conveyors of a sense of Eskimo life than were the more specific and focussed games, and therefore were making the choice on a global basis of contribution to learning about life-styles of Eskimos.

Only a quarter of both boys and girls liked best "reading the booklets," while 45% of both groups felt they "learned most" from them.

Questions 7 and 8

7. When studying about Eskimos, I find it hard to: (Check as many as you wish)

	Girls	Boys
play games in class	5	4
understand what is happening in the films	9	10
remember what I see in the films	23	20
understand what I hear on records	21	21
take part in class discussions	16	13
understand what I read in some of the booklets	24	30
explain to the teacher what I am confused about	20	18
ask questions	15	15
express my own opinion	27	25
learn the new words used in talking about Eskimos	28	30
Other (What was it?______)	9	7

8. Of the reading, I have liked best: (Check two)

poems	26	16
journal	19	23
stories	70	70
information on the Arctic and and Arctic Animals	19	32
The Many Lives of Kiviok	12	14
The True Play of How Itimangnark Got Kingnuk, the Girl He Really Wanted	42	34

Questions 7 and 8: Interpretation

This item is not comparable to that asked during Man and Other Animals; however, when children check the types of activities that they find most difficult during the Netsilik Unit, verbal usage in the form of vocabulary, reading, and opinion-giving are the three most frequently chosen items. It is worth noting in this regard, that about 6 percent more boys than girls checked "understanding what I read in some of the booklets" as hard. One in three boys felt this way, while less than 1 in 4 girls so checked. Fewer boys than girls found it hard to "take part in class discussions," "express my own opinion," and "remember what I see in films" but these are very small differences. Overall, the boys and girls are again quite similar in their choice of item here, and on the whole, difficulty spreads across all items, with the major exceptions of playing games and understanding what is happening in the films. No single item draws the concentrated choice that we find in other questions such as the "learning most" and "liking best" questions (5 and 6), or that we found in the Man and Animals checklist where the "written work" option was included and drew a majority response.

When we look at results on question 8, some obvious distinctions leap out. The first is that the stories of the Eskimos were the most universally liked reading of the unit, both for boys and girls. This is particularly important to note, since sex differences are more pronounced for other items in this question than is true on other checklist sections. Ten percent less boys than girls selected poems as favorite readings, while 13% more boys chose the booklet on the Arctic and Arctic animals. Boys also preferred Rasmussen's journal somewhat more than girls did and almost 10% less boys than girls selected the play as a favorite reading. These patterns do reflect expectable boy-girl differences in preference based upon traditionally inculcated appropriate readings. That a meeting of the groups occurs in the narrative of lives tells us much about a common ground of appreciation that can be utilized in preparing the core of written materials of a course.

Question. 9

9a. Of the following films, I liked **best** the one on:

	Girls	Boys
Itimangnark's family crossing a stream	8	5
Fishing at the Stone Weir (silent film)	22	27
the caribou and their trip to the tundra	14	9
Knud Rasmussen and his journey to the Arctic	18	20
caribou hunting at the Crossing Place	38	46

9b. Of the following films, I liked **best** the one on:

building the Karmak and fishing through the ice	11	14
the way parkas are made and sleds are prepared for winter	12	10
traveling in winter and building igloos	13	13
hunting seals	30	41
people playing games inside the igloo and sharing seals	13	8
Eskimo stone carvings and how they tell the legend of how the Raven lost its voice	9	6

Interpretation:

The hunting films emerge as favorites of children, with almost 10% more boys than girls selecting the seal hunting and caribou hunting films. The food-gathering process so essential for survival of the Netsilik was on the whole a most attractive element of the films associated with the Inland Camp and Sea Ice sections of the unit. Note should be taken of the enjoyment of these films, since many adults have found the caribou hunting film somewhat brutal and explicit in its footage of the hunt, and have expected children to be repelled by the technicolored realism of its presentation.

It should be noted that it is possible the second set of films is not fairly evaluated by this checklist, since many youngsters were in classes where the last two films particularly were not shown due to time limitations and the school year ending.

Questions 10, 11, 12 and 13

10. The pictures in the booklets:

	Girls	Boys
helped me understand the material better	40	36
were confusing	6	9
were interesting	48	43
were silly	8	11

11. In the booklets, I would rather have had photographs or more realistic pictures instead of drawings:

	Girls	Boys
yes	67	74
no	30	23
no answer	4	3

12. The class discussed the drawings in the booklets:

	Girls	Boys
yes	40	41
no	54	54
no answer	6	5

13. I understood the drawings in the booklets:

	Girls	Boys
very well	40	40
somewhat	57	52
not at all	2	5

Questions 10, 11, 12 and 13: Interpretation

In question 10, youngsters show very positive responses to the illustrations in the booklets of this unit, with only one in five making negative judgments. Note too that the girls were somewhat more charitable in their judgment, while the boys somewhat more often selected "confusing" and "silly."

In terms of drawings, it is interesting that while both boys and girls indicate a strong preference for realistic drawings, about 8% more boys prefer these realistic photographs.

As another check on the pictorial aspects of the booklets, question 13 elicited generally positive evaluations. Only 4% of the children felt that they understood the drawings "not at all," while 40% felt they understood them "very well." Other sections of the report dealing with readings and media presentation give many revealing examples of youngsters' awareness of illustrations and their quality and style.

Questions 14 and 15

14. The following questions are about the caribou hunting games you have played:

	% yes, Girls	% yes, Boys
Did you have fun?	96	95
Did the game help you understand how Eskimos hunt?	88	84
Did you fool around? (Be honest)	36	41
Did you understand the rules?	88	93
Did you make up your own rules?	13	13
Would you rather read or watch films about hunting than play the game?	30	34

15. Check yes or no for each of the following questions about the films you have seen on the Netsilik.

	% yes, Girls	% yes, Boys
Are there too many films on the Netsilik?	6	7
Is it helpful to see the same film twice?	83	84
Do you like color films?	98	97
Do you like black-and-white films?	44	43
Do you like silent films?	33	31
Did you have questions about the films that were never answered in class?	33	42
Would you like to have more narration in each film?	55	64
Are the films boring?	6	6

Questions 14 and 15: Interpretation

The question concerning the caribou hunting games shows the enthusiasm youngsters brought to playing these games. Practically the entire sample decided they "had fun." (No difference here between boys and girls.) They felt they understood the rules (boys more than girls) and that the games helped them to understand how Eskimos hunt (boys slightly less than girls --a switch from their positions on Questions 5).

There is a somewhat unfortunate wording to the last option, where reading and film viewing are lumped together under one choice; with this in mind, however, two-thirds of the youngsters preferred to play the game than to learn about hunting through the visual or written form. Boys were somewhat higher on this last positive choice than were girls, and also somewhat higher on "fooling around!" In fact, the percentage of youngsters who admitted to this last activity seems witness to the honesty of their responses.

On Question 15, there is consistent agreement between boys and girls on all but two of the items, and this agreement is overwhelmingly a positive one about the Netsilik films. Almost all students felt there were not too many films, found it helpful to see films twice, and expressed strong preference for color films. As we found in other evaluation results, generally youngsters like films with narration. This preference is not in itself sufficient reason for including narration with all films, however.

That boys have more unanswered questions about the films could be the reason for their also expressing more desire for narration -- they might be hoping for answers to some of these questions.
On Question 3, it was again more boys than girls who saw themselves asking questions; and on Question 5, fewer boys than girls saw themselves learning by listening to the teacher explain things. Throughout the checklist boys show a somewhat more action-oriented attitude, a more questioning stance than do the girls as a whole. However, considering usual sex differences, the boys and girls are in all respects surprisingly close together in their responses.

Questions 16 and 17

16. To get good marks when studying about the Netsilik Eskimos I had to: (Check three)

	Girls	Boys
memorize all the facts in the booklets	12	16
read well	41	34
be able to think of a lot of good examples	20	25
take part in class discussions	65	63
remember everything the teacher said	18	19
agree with the teacher	5	9
have my own opinion	39	40
write well	6	5
do extra projects	12	16
try to be as quiet as possible	14	14
bring in extra information about Eskimos	14	14
answer a lot of the teacher's questions	22	26
other (______________)	11	6

17. While studying about Eskimos, I liked best:

	Girls	Boys
working by myself	13	13
working in a small group	58	60
working with the whole class	27	25

Questions 16 and 17: Interpretation

The consistency in response is particularly striking in terms of interpretation of the classroom climate and their behavior in it that would produce "good marks." By far the overwhelming choice here was "take part in class discussions," indicating that in all classrooms in all systems, the discussion method or some variation upon it was seen by children as the primary teaching-learning mode. "Having my own opinion," the second most frequent choice, supports this interpretation, as do two other options, "be able to think of a lot of good examples," and "answer a lot of the teacher's questions."

The only other option drawing more than a quarter of student response was "read well." It is encouraging that less than one in ten students saw it as necessary to "agree with the teacher," and that only one in six thought that "memorizing all the facts in the booklets" was a prerequisite to good grades. On this question, boys more often felt they needed to think of good examples and answer teacher's questions (an example of their more active orientation) and less often than girls felt that they had to read well.

The response to Question 17 again reaffirms other evidence that children at the upper elementary grade levels prefer working in a small group to either working alone or working with the whole class. The interviews reveal many reasons for this choice, including the feeling of support, sharing and lack of formality the small group makes possible. Small group work does of course correspond with the typologies of behavior defined by Erikson and others as most common at this age level, for it permits a sense of industry and competence to develop in company with a group of age-mates.

Questions 18, 19, 20 and 21

18. I would rather learn about Eskimos:

	Girls	Boys
by reading	9	8
by watching films	88	89
no answer	4	3

19. Which part of the Eskimo unit was most interesting?

	Girls	Boys
learning about Arctic animals	10	16
learning about the tools Eskimos use	3	8
learning about the way Eskimos live and work	53	51
learning about the Eskimos' feelings, dreams and religion	32	23

20. When you were studying about the Netsilik, who did the most talking?

	Girls	Boys
the teacher	18	27
a few students and the teacher	35	33
Everyone, both the students and the teacher, talked about equally.	47	40

21. From studying the Netsilik, how well do you feel you know what it is like to be an Eskimo?

	Girls	Boys
very well	31	40
somewhat	59	50
not well at all	10	10

Questions 18, 19, 20 and 21: Interpretation

Question 18 needs no commentary!

Learning about animals and tools is more attractive for about 10% more boys than girls, whereas the girls prefer to learn about Eskimos' feelings, dreams and religion. Again, the boy-girl differences are those that might be predicted, but they are not large. Just about half of each group select as most interesting the general category of Eskimo life style --living and working. This seems important, because it indicates that youngsters are drawn to general questions of human behavior, and do not ignore these issues in favor of specific, more "manageable" information.

Boys see the teacher as doing more talking than the girls see the teacher as doing. Almost three-quarters of the students see the focus of class talk as divided between teacher and students, while the girls more than the boys see everyone participating about equally. As mentioned previously, throughout this checklist the boys and girls differ most on some perceptions of their own and classmates' roles in the class and on preferences in reading materials.

Interestingly, boys feel more strongly that they know very well what it is like to be an Eskimo than do the girls. Their involvement in games and hunting films, coupled with their questioning attitude and alertness in spoken exchange, seems to contribute to a sense of knowledge particularly in the boys. Only one student in ten, with no sex differences, feels he or she knows "not well at all" what it is like to be an Eskimo. In the interview section of the report many examples are given that illustrate the personal relevance of the unit, and the many intimate views of Netsilik life that each child holds as his own.

Comparison of 1968 and 1969 Netsilik Checklists

Comparison of matched items of the 1968 and 1969 Netsilik checklists shows a striking degree of uniformity in student response. While some items reveal statistically significant differences between the two years, for the vast majority of items, the differences are so small as to be inconsequential on a practical level.

The similarity of data corroborates the checklist findings discussed previously. It also indicates that students are continuing to perceive the course experience in the same manner, although the program itself is one year older. MACOS was in the second year of national field testing in 1969; the school systems sampled included those using the course for the first time and those in which it had been introduced previously. In both years the classes sampled were those in which the teacher was teaching MACOS for the first time.

In only two areas was there important variation in students' response: their global reactions to the Netsilik unit and their evaluation of the hunting games. In regard to the first, students in 1969 were somewhat more positive in their description of the unit than were those sampled in '68. Asked to select the words which best described the unit, twice as many chose "easy" in 1969 (22%) as in '68. Compared with the Man and Other Animals units, 74% found the Netsilik "more interesting", versus 65% in 1968. And the percentage of students who felt that their classmates had been "silly" while studying the Netsilik dropped from 25% to 16%.

During the 1968-69 school year, students on the whole spent more time on the Netsilik unit than they had the previous year. It would appear that these differences in response are more related to the time element than to curricular or classroom variations. Also, we have reason to believe that students respond more favorably to work in which they are currently engaged,or to work just completed, than to past work. However, follow-up interviews with children who studied the course in 1967-68 do show that preference for the Netsilik unit lingers a year later. Children, of course, respond to their perceptions of the teacher's attitude toward the curriculum as well as to the materials themselves. If the teacher spent a good deal of time on the Netsilik, children would have sensed its importance and responded more favorably to it. And because they spent more time on this unit, it is likely that it became easier to understand than it had been for children the previous year.

Similarly, the more negative assessment of the hunting games in 1969 may be related to the time element: in an abbreviated unit the games assumed special importance; in the full unit the games were one of many competing elements. For example, the percentage who selected playing the games as one of three "liked best" activities of the unit, decreased from 76% to 61%. When the entire unit is taught, some children could find other activities which were more appealing. The children who felt they "learned the most" from the games decreased from 42% to 27% (though two additional checklist options were available this year, making the questions noncomparable). Likewise, those who found it "hard" to play games increased from 5% to 10%. Caribou hunting at the Crossing Place was the best liked film in the first part of the unit both years, but the percentage of children selecting it dropped from 42% to 24%.

Only one other item on the checklist showed significant variation: more children liked the winter travel and igloo building film in '68-'69 (31% versus 13%), perhaps simply because more students had seen it.

Learning Styles

Could we extract "learning styles" from the pattern of student responses to the checklists? This presented itself as a crucial research issue because a number of important questions about student learning kept cropping up in our minds in the course of the evaluation. For example:

1. Do students of different ability levels seem to prefer different learning modes?
2. Do boys and girls prefer different learning modes?
3. Do students from different socio-economic backgrounds exhibit different learning styles?
4. Does MACOS accommodate a range of learning styles?
5. Do students who express preference for certain learning modes learn more?
6. Does information about learning styles help teachers with problems of classroom management?

If we had some answers to these questions, teachers would have information to help them create the most satisfying climate for their students. The checklist findings helped us define the predominating experiences in MACOS classes, and shed some light on these issues. But we needed a better summarizing method to learn what checklist options for several questions would cluster together to form a more holistic "learning style." For example, were students who learned most by "doing projects" the same ones who saw projects as the means to getting good grades in the course, or as their "best-liked" activity? Further, we wanted to be able to determine preferences in learning modes as opposed to simple perceptions of class functioning. For example, if items of "enjoyed," "interested," "learned most from" are associated together with the content "herring gull film," children have expressed a preference.

If on the other hand, a cluster of items is composed of the teacher talking "most of the time," "answering questions" and "taking notes" as the way to get good marks, we would have a description of the class environment with a minimum of preference component.

Of the many ways to investigate this problem, factor analysis is the technique we chose to use to explore these interrelationships. This technique provided us with clusters of highly correlated checklist items. In addition, other variables such as sex, school system, test scores and I.Q. were included in the analyses to determine their affiliation with particular ways of learning. The only reference to the analytical base of this study is the listing of checklist items which were found to cluster in each factor. This gives the reader a chance to see a portion of the data base from which the interpretations were made.[1]

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[1] Because of the mathematical obscurity of the methodology, many persons are put off by a detailed account of these explorations. Consequently, the analytical niceties are avoided here, and the section is limited to descriptive prose drawing on the quantitative analyses. To give a sense of scale, two factor analyses were computed, one for Man and Other Animals items, the second using Netsilik items; the first on Man and Other Animals items was based on 198 variables and a sample of 1494 students; the second, on Netsilik items, was based on 150 variables and a sample of 1128 students.

FACTOR I: DISCURSIVE MODE

Checklist Items Contributing to the Factor

What is your opinion about class discussion on Man and Animals?
Discussions help me to better understand what we are studying.

To get good marks when studying about baboons, I had to answer a lot of the teacher's questions.

If I could have my classroom any way I wanted it, I would choose several people talking quietly.

If I could have my classroom any way I wanted it, I would choose less than 20 students.

What is your opinion about class discussions on Man and Animals?
They are hard to understand.

While working on baboons, I have not been excited.

What is your opinion about class discussions on Man and Animals?
They are not easy to understand.

To get good marks when studying about baboons, I had to take part in class discussions.

While working on this course I have not been wishing we could spend more time reading the booklets.

In school I do not like to work best with the teacher's help.

What is your opinion about class discussions on Man and Animals?
Discussions do not "mix me up."

The discursive mode describes students who were involved in discussion as their primary learning mode; they did not make such a choice because discussions were an easy form of learning or even an exciting form; they in fact felt that discussions were hard--not confusing, but hard; they felt discussions were helpful to their gaining an understanding of the concepts of the course. They didn't want to spend more time on the booklets nor did they like best when working with teacher help; they wanted small classes where several people could talk quietly at the same time. They felt that participation in the discussions and answering questions was essential to getting grades in the course. These students were outstanding from the point of objective assessment; they were brighter than average, they did well on the pre tests and even better on the post tests--by these standards they learned a great deal. This was not a fourth grade style of learning as much as that of the fifth graders and even more predominantly that of the sixth graders. Interestingly more boys chose this discursive mode as their learning style than did girls. Such students were found in all of the school systems in the experimental sample; however, they were found in Newton more often than in any other system and least often in Oakland or Philadelphia. The dynamics of this style of classroom discussion are illustrated in Section IV under the title: "Do Students Ask Questions and Share Ideas Productively?"

FACTOR IIa: TOWN MEETING SET I

When we are studying about Man and Animals, the boys and girls in my class spend most of the time talking to each other about the course.

When we are studying about Man and Animals, the boys and girls in my class spend most of the time listening to the teacher.

While working on this course I have been asking questions.

While working on baboons I have been talking with the other boys and girls about Man and Animals.

While studying about baboons the boys and girls in my class have been asking the teacher a lot of questions.

When I am studying about Man and Animals I always ask questions when I don't understand something.

What is your opinion about class discussions on Man and Animals?
My classmates often have new and interesting things to say.

What is your opinion about class discussions on Man and Animals?
The teacher does not do most of the talking.

What is your opinion about class discussions on Man and Animals?
My classmates do not usually just repeat what the teacher and the booklets said.

The presence of another factor relating to verbal exchanges further delineates these attributes of MACOS learning styles. We have called it the Town Meeting Set Factor. How might we contrast this verbal interchange factor with that of the Discursive mode?

In the first place, this factor describes students talking with each other and about the course, first during the Man and Other Animals Unit, Factor IIa, and then in the II^b cluster, while students are attentive to the teacher, the teacher plays a less dominant role in class than he or she does in the question-answer mode below. The teacher does not dominate nor do students see themselves repeating what the teacher has said.

This collection of items does not have the cognitive focus of the discursive mode. These discussions are not "hard", they aren't even essential to learning about Man and Other Animals, or to getting good grades. This group sounds convivial, pleasant, lower-pressured, less conceptual, and could in fact show some aimlessness in their chatting together. In so many ways it is comparable to the following factor which is based on Netsilik Unit items.

Boys tend to be contributors to this factor more than do girls, fifth graders more than sixth graders, and the two northeastern suburbs, Newton and West Hartford, plus New Jersey, are positively related to the factor while Colorado and Missouri systems are negatively related. This group also tends to have lower than average pre-post test scores, and is not of high ability as measured by I.Q. The factor seems to describe the average student who studied the course and enjoyed the interactive discussion it promoted.

FACTOR IIb: TOWN MEETING SET II

Checklist Items Contributing to the Factor

Since I started studying about Eskimos, I have been asking a lot of questions.

When studying about Eskimos, I find it easy to take part in discussion.

The following questions are about the caribou hunting games you have played.
Would you rather read or watch films about hunting than play the game?
Preferred films to games.

So far I have learned the most about the Netsilik from taking part in discussion.

While studying about Eskimos, I have liked best discussing things about the Eskimos.

While studying about Eskimos, I liked best working with the whole class.

While studying about Eskimos, I liked the whole class working together better than in small groups.

So far I have not learned the most about the Netsilik from games.

While studying about Eskimos, I didn't like the games "best."

The orientation of students on Factor IIb seemed to turn on participatory functions: asking questions or learning from discussions; taking part in class activities. The factor was sharpened by the contrast with games which were perceived as less functional by these students than by others in mastering the concepts of the Netsilik unit. Since games were a popular activity and were perceived to have been very helpful in the mastery of ideas about caribou hunting by most students, this denial by the Town Meeting Set is notable. The only time films entered this factor was to assist in placing games in a more deprecatory position. This group did like everybody gathering together to do their work; groupiness was a way of life. These students have a learning style which appears much less focused and competitive, and much more convivial, and participatory than does the discursive group.

On this IIb factor the male - female differences go in the direction that one would expect with more girls expressing interest in this style of learning than do boys, but the relationship is not so pronounced as one might expect. Most school systems were also neutral which means that seldom were there classes without some town meeting members. Two systems were exceptions to this: Marin County, California and Illinois had many more than their share. Neither pre test, nor post test scores nor IQ had any relationship with the factor. The Town Meeting Set, in other words, were typical students on the indices of ability, performance and learning.

FACTOR III: TRADITIONAL PEDAGOGY

Cluster a) Question - Answer

While studying about baboons the boys and girls in my class have spent most of the time answering the teacher's questions.

While working on this course I have been listening to what is being said in class.

While studying about Man and Animals the boys and girls in my class have been asking the teacher a lot of questions.

While studying about baboons the boys and girls in my class have spent most of the time asking the teacher questions.

While studying about baboons the boys and girls in my class have spent most of the time listening to the teacher.

When we are studying about Man and Animals, the boys and girls in my class spend most of the time listening to the teacher.

When we are studying about Man and Animals, the boys and girls in my class spend most of the time answering the teacher's questions.

Cluster b) Projects

I learned most about baboons when I did projects like the environment boards.

While working on baboons, I have been working on projects.

While studying about baboons the boys and girls in my class have spent most of the time doing projects, drawings.

While working on this course I have been working on projects.

When we are studying about Man and Animals, the boys and girls in my class spend most of the time doing projects, making charts, pictures, diagrams.

This third factor is different in structure than the first two. The first two factors, the discursive mode and the Town Meeting Set each represented a single conception of a learning style to which students could respond positively or negatively. The third factor like all factors in factor analysis has positive and negative poles but in this case the poles represent not simply presence or absence of qualities but two different substantive positions. The items at either end of the continuum have the ring of a traditional style of pedagogy; hence, the name of the factor. But more importantly, what is the substance of these two reflections of traditional pedogogical style? One end of the factor is defined by questions and answers as they ping-pong between student and teacher. For example, it is filled with items such as listening to the teacher, asking teacher questions, listening to what is said in class, answering teacher questions; essentially those activities that constitute the age-old social studies format. On the other end of the continuum is a series of items about projects. They consist of such activities as making charts, doing projects, and drawing -- more traditional forms of elementary social studies instruction and wide-spread in practice. We thus conceive of the traditional pedogogical style as composed of two parts: a) question and answer and b) projects. Students could then in this analysis select items describing a learning style that associated with the traditional style in total, or they could have focussed on either of the poles: question-answer or projects.

Girls tended to choose the question-answer end of the dimension; boys the project end. Fourth graders tended to choose the projects and sixth graders the question-answer; Newton and New Jersey students were more question-answer, discussion oriented than were students in other systems, while West Hartford and Philadelphia students were more project prone than were other students. Is this a teacher style issue? Were the materials rich enough and sufficiently open to permit the teacher to impose his own "traditional" style on MACOS? Was this the students choice drawn from their background of experiences and from their own basic preference of learning styles? These data would tend to support the first hypothesis--that traditional pedagogical styles were externally imposed essentially being teacher rather than student choice. This conclusion is based on the lack of items appearing in this factor which represent areas of children's enjoyment and engagement. There is less emphasis on items such as interesting, not boring, trying to do a good job, or learning new things.

FACTOR IV: THE EAGER BEAVERS

To get good marks when studying about the Netsilik Eskimos I had to do extra projects.

Compared with the Man and Animals unit, the Eskimo unit is harder.

To get good marks when studying about the Netsilik Eskimos I had to bring in extra information about Eskimos.

Since I started studying about Eskimos, I have been looking for extra information on my own.

So far I have learned the most about the Netsilik from making things such as tools.

While studying about Eskimos, I have liked best making things such as tools.

The class discussed the drawings in the booklets.

This cluster of items does contain a certain functionalism which places the interest of these students very close to the project orientation of Factor IIIb. The item "discussing the booklet illustrations in class" had the largest relationship to the factor; this was followed by items on learning from and liking those things that one makes. These students look for extra information on their own; they feel that's the way to get grades. While this did originate as a separate factor, essentially it parallels for the Netsilik Eskimo Unit the Projects Factor IIIb of the Man and Other Animals Unit, with the exception that this factor includes an "extra work" dimension.

The students who were involved in this factor were not a bright group on the traditional measures; also, there was no male - female distinction as the project-oriented technical style might imply. These children through extra diligence pursued their rewards; they appeared sincerely concerned with doing well, and were object rather than conceptually oriented.

FACTOR IV: READING - FILM

Cluster a) Reading

Since I started studying about Eskimos, I have been wanting more reading.

So far I have learned the most about the Netsilik from reading the booklets.

Which part of the Eskimo unit was most interesting?
Learning about the Eskimos' feelings, dreams, and religion.

While studying about Eskimos I have liked best reading the booklets.

I would rather learn about Eskimos by reading.

Cluster b) Film

Since I started studying about Eskimos, I have been wishing we wouldn't have to do so much reading.

Which part of the Eskimo unit was most interesting?
Not how Netsilik live and work.

These students checked less frequently than others how Netsilik Eskimos live and work.

While studying about Eskimos I have liked the films more than most students.

I would rather learn about Eskimos by watching films.

Factor V like that of III has bi-polar qualities; at one end of the continuum cluster those students whose learning preference is for reading; at the other end are those whose preferred learning style is through film. It was fortunate that a reading-film learning mode contrast was found in these data; for the factor effectively juxtaposes two of the most powerful styles of teaching used in the schools. If we had obtained simply a "film non-film" learning mode we would have learned little from the analysis. From the checklist data (which have been presented extensively elsewhere in the report), it is clearly evident that an overwhelming percentage of the students in the total field test enjoy films and are strongly convinced that they learn efficiently and extensively from film. They go even further, for they contrast the MACOS films (positive) with those they see on TV (negative); they ascribe an important reality quotient to the film content.

Essentially then, what does this analysis add to our understanding? Knowing that the majority of students express great enthusiasm for learning via MACOS film, it is interesting to find that some fifth graders feel they want to learn and learn best by the more traditional mode of reading. This finding is made more provocative by the associated variables; girls feel this way more than boys as we would expect, but the difference is very small. Reading research has long indicated that boys have ten times as much problem with reading -- a quiet, passive activity taught by lady teachers -- as do girls. From that finding we often jump to the conclusion that boys basically have little interest in reading. These results challenge that position. The interest of boys in the reading mode of learning is virtually as high as girls. Does the content of the materials give a reason for this increased interest of boys?

There are two results of this factoring that are worthy of special note. The first is that an interest in reading as the preferred learning style is not associated with IQ. Since we do know that reading as a skill is highly associated with ability, this finding comes as a refreshing surprise. A number of teachers have described the course as a "reading" course, for its subject matter served as a magnate to draw non-readers into the flow of the ideas and the concepts. And students after having developed this engagement latched onto the booklets and began to read as they never had before. To determine whether MACOS does serve as a reading course would in itself be a worthy experimental enterprise. That some teachers found evidence in their classrooms to support this hypothesis does help to explain this result.

The second point is that students who have chosen the reading mode of learning over that of film do not cluster in any particular school system. We so often have heard of the suburban readers and the center city non-readers, As shown earlier, when we examine the pre and post test data, we do find school system differences; but the learning gains that take place are not a function of the knowledge a student has as he begins the course. Such gains occur as frequently and extensively in the center city schools as they do in the suburban settings. This phenomenon possibly is being reflected in this factor, and helps to explain why students who prefer the reading mode of learning do not coalesce in any particular system.

Two factors from the analysis reflect the feelings of students who were having difficulty with the course and were non-learners. It should be noted that both of these factors are concerned with the Netsilik unit. Let's look at them with some care to see if we can understand these children and the problems they were having.

The first of these factors we called The Unpsyched and the second The Critics. While the names of the factors might be inappropriate, they were chosen to convey the feeling that the materials, the teacher, the classroom, the classmates, or the interaction of all of these variables were somehow wrong for these children. By this exploration we shall attempt to pull out some hypotheses which might help to avoid in the future some of the frustrations that these children faced.

FACTOR VI: UNPSYCHED

There are not enough films on the Netsilik.

When studying about Eskimos, I find it hard to understand what I read in some of the booklets.

When studying about Eskimos, I find it hard to play games in class.

To get good marks when studying about the Netsilik Eskimos I had to memorize all the facts in the booklets.

To get good marks when studying about the Netsilik Eskimos I had to agree with the teacher.

I didn't learn about the Netsilik from taking part in discussion.

To get good marks when studying about the Netsilik Eskimos I didn't have to have my own opinion.

To get good marks when studying about the Netsilik Eskimos I didn't have to take part in class discussion.

So often, when we think of "psyching out" a course we are addressing those of college age. Here we have evidence that understanding a style of a course (or lack of it) begins very early in life -- and becomes sufficiently prominent that it can be uncovered by the crude approximation of factor analysis. We could say that the items read like a "how to fail in MACOS" list especially if we contrast these with the goals of the course. This list includes memorizing facts and agreeing with the teacher as ways to get grades; discussions are irrevelant, the games are hard, the reading is difficult. All this makes it sound like the guide book read backwards. What is equally disturbing is that the cycle appears reinforcing. These students were of low measured ability and were poor scorers who learned little from the course. The factor involves more than average number of students from Colorado, and fewer than average from Newton. It consists of fourth graders, not fifth graders and very few sixth graders. Possibly the course is too complex for some fourth graders; the development of another year or two may be helpful in grasping and appreciating the style of the course; or possibly some fourth grade teachers do not feel their students are ready for the interactive, exploratory style of the course. The analyses have demonstrated that MACOS materials work well with students of considerable grade range and of considerable ability range. However, this factor seems to be primarily composed of students who are both young and below average in ability. Our hypothesis would be that the course is inappropriate for less able fourth grade students. Outstanding teachers may be able to conduct classes that would be exceptions to any such implied generalization.

FACTOR VII: THE CRITICS

When studying about Eskimos, I find it hard to explain to the teacher what I am confused about.

When studying about Eskimos, I find it hard to understand what I read in some of the booklets.

Compared with the Man and Animals unit, the Eskimo unit is harder.

In the booklets, I would rather have had photographs or more realistic pictures instead of drawings.

If I had to describe the unit on the Netsilik Eskimos, I would use the words confusing at times.

The pictures in the booklets were not interesting.

From studying the Netsilik, how well do you feel you know what it is like to be an Eskimo? Not well at all.

If I am describing the unit on the Netsilik Eskimos, I do not select the word fun.

The results of factor VII came from students who are not converts to the Netsilik unit in either pedagogy or content. In fact, this group of students gave us a pronounced negative view of the materials. According to them the Netsilik Eskimo unit was confusing, not fun, harder than the Man and Other Animals unit; the reading was hard to understand and one couldn't even explain the confusion; the booklet pictures were not interesting. These students had less idea than others of what it was like to be an Eskimo.

The factor was somewhat more female than male. The school systems most involved were Marin County, California and Colorado; sixth graders were high on the factor (the ungraded classes, however, were on the positive end of the scale), and IQ was slightly above average and test scores were somewhat below average. The evidence we have points to the materials of the course as the culprits -- the booklets were hard to understand, the photographs should have been more realistic, the themes were confusing and students gained no sense of Netsilik life. The implication here seems to be that a greater structuring of the materials might have helped these students. Such an implication gives a clue to the student's personal style: the teacher was the only personal source of help mentioned -- and that failed. With MACOS, which places heavy emphasis on a variety of learning styles and foremost among these styles, verbal interaction, this group of students was sadly out of touch. The factor did not include reference to classmates or discussions or even to films or games. Apparently these students as a group did not see interactive skills as necessary for work in this course. They were in age a mature group and of average ability. Yet they seemed to have special difficulty with the Netsilik unit materials; and no items that mentioned verbal participation as a means to understanding emerged in the factor. Hence the hypothesis: those students who are critical of the materials, who find the course difficult, and who appear to take no special cognizance of interactive work will neither like the course nor learn as much from it.

In summary, the factors have been useful in delineating the environments in which MACOS was used. Some of these, such as the "Town Meeting" style of learning, were associated strongly with student preferences; and others, such as the "Question-Answer" mode, seem to be styles established by teachers, without any motivating aspect for children, for they are not associated with positive preference or affective checklist items. One attempt to understand students' preferences in learning modes, and the items into which these cluster is, then, confounded by the fact that the teacher is the mediator and usually the determiner of classroom climate, in that her teaching style defines the parameters of activities by which children can choose to learn.

Obviously, this work is not intended to give definitive answers to the questions posed earlier. The summarizing power of factor analysis does, however, provide some provocative insights into students' reactions to their classroom environments and course materials. Since we will be referring back to the factors, their titles are again given:

Factor I: Discursive Mode
Factor IIa: Town Meeting Set I
Factor IIb: Town Meeting Set II
Factor III: Traditional Pedagogy
    Cluster a: Question-Answer
    Cluster b: Projects
Factor IV: Eager Beavers
Factor V: Reading-Film
    Cluster a: Reading
    Cluster b: Film
Factor VI: Unpsyched
Factor VII: The Critics

A review of the factor results suggests the following answers to the questions raised earlier.

1. Do students of different ability levels seem to prefer different learning modes?

Most of the factors are not associated with ability. The exceptions are the "Eager Beavers," the "Unpsyched," and the "Discursives." The Eager Beavers, for example, appear to be youngsters with less ability in the conceptual, abstract areas who thus found the Netsilik unit more difficult than the Man and Other Animals unit where more specific and repeated information was available to them. Students showing a Discursive mode of dealing with the course seem to be the most serious-minded students, involved in verbal exchange, and expressing more preference for small classes and small, informal discussions without teacher help than do other students. They were also children of high ability.

2. Do boys and girls prefer different learning modes?

Again, we rarely found factors that revealed male/female differences. Only in the area of traditional pedagogy -- a teacher-determined style -- did girls interpret the climate as requiring more verbally oriented, passive activities (question-answer) and did boys show a tendency toward the more active project orientation. In other words, factors most descriptive of MACOS learning styles -- discussion, reading and film learning -- do not show boy-girl differences. Verbal expression is typically an area in which boys are considered less able; and they tend to be less mature than girls at this age. In this course, however, boys consistently show somewhat more questioning, observing and investigatory preferences than do girls, and exhibit their interests by considerable participation in class.

3. Do students from different socio-economic backgrounds exhibit different learning styles?

There is no separation on the majority of factors. Only on the Discursive mode -- drawing the majority of students from suburban samples -- and the Eager Beaver mode -- drawing more children from the urban centers -- do we find notable differences. Is it the functioning of the classroom that encourages these differences? Some evidence suggests yes (see, for example, Do Children Ask Questions and Share Ideas Productively? and the center city case study in Section II).

4. Does MACOS accommodate a range of learning styles?

It is apparent that children who prefer independent work or projects, or who were not inclined or able to develop social learning skills, did not enjoy or learn as much from these materials as did the majority. There was also another group that did not learn as much as the norm for this course. Such children tended to be fourth graders of low ability. This suggests that there is a minimal amount of social maturity and mental development necessary for full participation in the issues of the course.

5. Do students who express preference for certain learning modes learn more?

The "Discursive" mode is the only exceptional factor on the dimension of tested learning. The engagement with the material that the "Discursive" mode suggests — serious thinking in a discussion situation where vital exploration and learning are on-going — results in larger learning gains in terms of tested outcomes. As you will recall, most children found discussion "easy" while this group of children did not; they represented a minority of students, but one especially provoked to hard thought by discussion.

In terms of learning gains, there seemed to be a trichotomy of types. The Discursive mode children seemed to spurt ahead, dealing with the conceptual issues of the course in a serious fashion. For the average learner (spread over all of the other positive learning styles of the course — Town Meeting, Film-Reading factors, etc.) individual variation in learning was predominant, and gains were not associated with the learning style itself. These groups made average learning increases in terms of tested outcomes. A third group were those who seemed to learn less (the Unpsyched and the Critics) and who were not engaged in the active dimensions of the course or did not seem to possess the minimal amount of maturation necessary for significant engagement with its content.

The middle group is the most interesting to think about. They appear under a collection of learning styles, both modern and traditional; and they show essentially no differences in amount of learning. The traditional question-answer approach was as effective as the Town

Meeting Set. It seems clear that simply moving to modern pedagogical techniques will not in and of itself produce unusual learning gains. But there are two sides to this coin: students learn as much through the Town Meeting style as they do through the traditional question-answer approach; and in addition, they enjoy the former method of instruction much more than the latter. If we were to broaden our criteria from simple test mastery to include affective gains, then the Town Meeting mode would seem to have a marked advantage and be a more desirable learning style.

6. Does information about learning styles help teachers with problems of classroom management?

These analyses point to several issues of classroom management. First, there is clearly one very productive style of conducting MACOS classes, not only considering tested learning but also taking into account interview and observation findings. Students whose pattern of checklist responses clustered into the Discursive mode made the greatest learning gains of any group. When children were engaged in small discussion groups, and did a good amount of hard thinking via discussion, they seemed through this verbal mode of participation to master the cognitive aspects of the course. If this mode can be combined with some of the freer, more enjoyable components brought out in the Town Meeting Set factors, we have established some rather ideal aspects of the verbally interactive classroom.

From this perspective, the teacher should take care to notice the student who is not engaged actively in the course, for such children were not (as we sometimes suppose) quietly reflecting about the ideas of the course; they did not seem either to enjoy or to master the course material. Teachers may want to make opportunities for spending time working with such students, or use teachers' aides for this purpose when they are available. It would seem advisable to determine the special difficulties and frustrations with the course these students feel, and to draw them more into the larger classroom flow.

It also seems evident that in terms of student learning, teachers should feel free to experiment with a range of pedagogical styles within their classrooms. From these analyses, it appears that students in both more open and progressive, and more structured and traditional classes mastered approximately the same amount of cognitive material as measured on tests. Teachers do not need to fear that when students are engaged in small group or student-centered discussion rather than following a more tightly structured question-and-answer routine, they are not learning as much. They are. In addition, the open classroom is to be encouraged in another important respect: students are more involved in and enjoy the course more when it is less teacher-centered and directed, and more student-oriented.